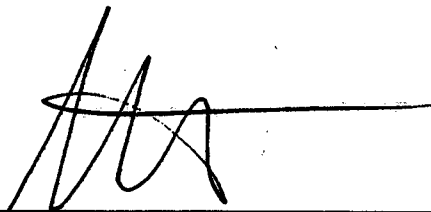


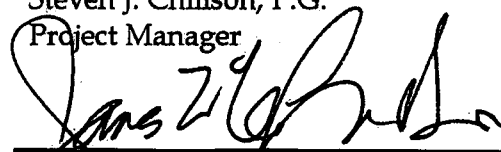
**FIRST QUARTER 1998
QUARTERLY MONITORING REPORT**

L.E.CARPENTER

July 1998



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Section 1

Introduction

L.E. Carpenter and Company (L.E. Carpenter) is pleased to submit this Quarterly Monitoring Report for the L.E. Carpenter site located at 170 North Main Street, Wharton, New Jersey (Figure 1). Quarterly monitoring events are performed at the site to comply with paragraph 35 of the 1986 Administrative Consent Order issued by the New Jersey Department of Environmental Protection (NJDEP) to L.E. Carpenter. This report provides a summary of activities for the First Quarter 1998, including routine quarterly groundwater monitoring activities.

During the first quarter 1998, RMT conducted the following:

- Continued active free product recovery using enhanced fluid recovery (EFR) in accordance with the NJDEP approval letter dated August 20, 1997.
- Conducted quarterly groundwater monitoring activities as required under the Administrative Consent Order.
- Conducted investigation of the MW-19/Hot Spot 1 area (the investigation results have been submitted to the NJDEP) in accordance with the NJDEP letter dated January 20, 1998 (Appendix A).
- Replaced monitoring well MW-11I and MW-11D in accordance with the NJDEP request contained in their letter dated January 28, 1998 (Appendix A).

A discussion of these activities is provided in the following sections.



Section 2

EFR Activities

In August 1997, the NJDEP approved the Remedial Action Plan (RAP) which described free product removal using enhanced fluid recovery (EFR) for the area eastern portion of the site using enhanced fluid recovery (EFR). EFR is conducted by applying a vacuum to product recovery wells to remove standing free product, contaminated groundwater, contaminant vapors within the vadose zone, and to enhance any natural biodegradation that may be occurring in soil and/or groundwater.

RMT installed twenty-eight EFR wells according to the RAP during October 1997. The EFR wells were located within the area of free product defined by Roy F. Weston (Weston) during past site activities (Figure 2). On December 9, 1997, the first EFR event was conducted followed by five subsequent EFR events conducted during the first quarter 1998 (Table 1). EFR events were conducted on a bimonthly basis in January and March 1998 and a single event was conducted in December 1997 and February 1998. A discussion of the recovery well installation and EFR procedures was provided to the NJDEP in the Fourth Quarter 1997 Groundwater Monitoring Report.

Prior to conducting EFR, the product level and thickness were measured in each EFR well. The product measurements were recorded to determine the correct placement of the hose or drop pipe and to track the amount of free product and the total volume of fluids removed during EFR through the first quarter 1998. Please note that the anomalously low product thickness values on January 22, 1998 are apparently due to measurement error and do not reflect actual product thickness during this event. Therefore, these values have not been used in the data analysis. Appendix B contains charts that graphically display the free product thickness fluctuations, and Figure 3 shows the extent of free product for each EFR event.

The amount of free product removed was estimated based on product thickness measurements collected from the vacuum truck and the estimated volume of product vapor that was lost through the vent stack. Product vapor volume estimates were based on air flow measurements and concentration of VOCs being vented. Of approximately 5,495 gallons of fluid removed during the implementation of the EFR activities, it is estimated that, through the first quarter 1998, approximately 1,205 gallons of free product has been removed.

Changes in product thickness versus time are illustrated on the charts presented in Appendix B. The following paragraphs describe free product thickness trends in the western, central, and eastern portions of the free product plume.

In the western portion of the plume, there is an upward trend in product thickness in centrally located EFR wells 2, 21, and 28, while the thickness in the "perimeter" wells (EFR wells 1, 3, 20, 17, and 18) has decreased in the western portion of the plume. This information indicates that the EFR activities may be pulling the bulk of free product in this area toward the centrally located wells while removing the product from the "perimeter."

In the central portion of the plume, the free product thickness has decreased in almost every well, with the exception of EFR well 6, where there was a general increase in thickness from the December 1997 EFR event (1 foot) to the March 27, 1998, EFR event (1.17 feet). Product thickness in the EFR "perimeter" wells (EFR wells 4, 7, 23, and 27) has decreased to non-measurable levels and a significant decrease in product thickness has been observed in perimeter EFR wells 19, 25, and 26. A significant decrease in product thickness has occurred in EFR well 5 located along the central axis of the plume suggesting that the EFR activity at EFR wells 4, 5, 6, 7, 23, and 27 has narrowed the plume in this area.

In the eastern portion of the plume, product thickness has increased in EFR well 10 from approximately 5 feet to 6 feet, and in EFR well 11 from approximately 3 feet to 5 feet. Both of these EFR wells are located near monitoring well MW-11S where upwards of 10 feet of product has been observed. Product thickness has generally increased in EFR well 13 and product thickness has fluctuated in EFR well 9 from undetectable levels to approximately 3 feet. Product thickness levels in the remaining wells in this area (EFR well 8, 12, 14, 15, and 16) have remained relatively consistent with levels tending to decrease to, or remain at non-detectable levels. Similar to the western area, the EFR activities may be pulling the bulk of free product in this area toward EFR well 10 and EFR well 11. However, a thin layer of product still remains around the perimeter.

These trends indicate that EFR activities are reducing the plume thickness and extent and that EFR activities should continue without alteration until monitoring of the plume indicates otherwise.



Section 3

Quarterly Monitoring

During the first quarter 1998, RMT conducted routine quarterly groundwater monitoring activities at the L.E Carpenter site in accordance with the revised quarterly sampling program initiated during the second quarter 1995 sampling event. In addition, RMT also installed and sampled monitoring wells MW-19-1 through MW-19-5 to determine groundwater impact in the MW-19/Hot Spot 1 area. The results of the sampling in this area are discussed in two separate reports submitted to the NJDEP on June 9, 1998.

Groundwater sampling was conducted on March 12, 1998, in accordance with the procedures contained in the NJDEP's "Field Sampling Procedures Manual" dated May 1992. Monitoring wells MW-15S, MW-15I, MW-14I, MW-22R, MW-25R, and MW-4 were sampled utilizing a peristaltic pump to purge the wells of at least three well volumes prior to sampling. (Please note: Monitoring wells MW-22 and MW-25 were abandoned and replaced by Weston during the week of July 21, 1997 and are referred to as MW-22R and MW-25R in this report.) During the well purge process, indicator parameters were monitored and recorded so that a representative sample of the formation water was collected for analysis (Appendix C). Once the wells were purged sampling was conducted using Teflon coated plastic bailers.

A sample duplicate, a field blank and a trip blank were collected to satisfy quality control requirements. The trip blank was prepared by the laboratory and remained with the sample containers until the samples were returned to the laboratory. The duplicate was collected from monitoring well MW-4. The field blank was collected by pouring distilled water through a Teflon bailer to verify that the field equipment was not adversely impacting the samples and that decontamination procedures were adequate. Any sampling equipment that was used from well to well was decontaminated before each use using a soap and water wash and distilled water rinse.

The results of the chemical analyses were compared to the NJDEP Class IIA Groundwater Quality Standards (New Jersey standards) and the Discharge Criteria presented in the Record of Decision (ROD) dated April 20, 1994. The presence of benzene was not detected at concentrations above the method detection limit in any of the groundwater samples. Only one sample collected from well MW-22 contained concentrations of contaminants above the New Jersey standards and/or the discharge criteria.

Concentrations of toluene (348 µg/L), ethylbenzene (4,070 µg/L) and total xylenes (20,600 µg/L) were detected in the sample collected from monitoring well MW-22. The concentrations of ethylbenzene and total xylenes were above the New Jersey standards of 700 µg/L (ethylbenzene) and 40 µg/L (total xylenes) and the more stringent discharge criteria (ethylbenzene - 350 µg/L, total xylenes - 20 µg/L). Low concentrations of ethylbenzene (0.33 µg/L) and total xylenes (1.5 µg/L) were detected in monitoring well MW-25R below the New Jersey standards and the discharge criteria. Toluene was detected at a concentration (1.4 µg/L) below the New Jersey standard and the discharge criteria.

The groundwater analytical results are presented in Table 2 and analytical laboratory reports included in Appendix D.

Sampling activities and all laboratory analyses were performed by Envirotech Research, Inc. of Edison, New Jersey.



Section 4

Watertable Elevations

On March 26 and 27, 1998 RMT collected groundwater levels from 27 monitoring wells located throughout the site (see Table 3) to evaluate the groundwater flow patterns in the shallow aquifer at the L.E. Carpenter site. It should be noted that five of the 27 wells monitored were observed to contain a measurable amount of free product. These wells include monitoring wells MW-1R (1.34 feet), monitoring well MW-3 (0.25 feet), monitoring well MW-6R (0.03 feet), monitoring well RW-1 (0.88 feet), and monitoring well WP-A1 (2.14 feet). Corrected water levels were used in the compilation of the groundwater contour map using a specific gravity of the primary constituent (toluene: 0.87). Figure 4 displays the watertable potentiometric surface and indicates that groundwater flow direction is similar to that observed previously (generally toward the northeast and discharging to the drainage ditch located on the Air Products Property).

Groundwater levels from the MW-19/Hot Spot-1 area were also used to determine flow patterns on the western portion of the site. It appears that a groundwater mound is present in the vicinity of monitoring well MW-20. This mound is probably related to the fact that groundwater within the relatively lower permeable clay, observed at monitoring well MW-20, will respond more slowly to fluctuations in the water table than groundwater within the relatively more permeable sandy materials that are located beneath most of the site. This difference in the response can cause a groundwater mound as seen in the western portion of the site.

RMT was unable to determine the specific interaction of the Rockaway River, the ditch located on the Air Products property to the north, and the Washington Forge Pond with shallow groundwater because the staff gauges were missing. The staff gauges will be replaced during the third quarter, 1998.



Section 5

Monitoring Well MW-11I/D Replacement

RMT replaced monitoring wells MW-11I and MW-11D as requested by the NJDEP in their letter dated January 28, 1998. The well installation was subcontracted to Aquifer Drilling & Testing - MidAtlantic, Inc. (ADT) located in Trenton, New Jersey. ADT obtained the appropriate NJDEP monitoring well installation permits prior to conducting field activities. NJDEP permits and monitoring well records are included in Appendix E.

The replacement wells were installed on February 20, 1998 using rotary air hammer and mud rotary drilling methods. Six-inch diameter steel surface casing was installed in both wells to depths of approximately 18.5 feet below grade using rotary air hammer methods. The surface casing was installed to be certain that a good seal was maintained while drilling through the free product layer and the clay layer to prevent cross contamination of the intermediate and deeper aquifers. The clay layer is suspected of acting as an aquitard separating the shallow aquifer from the intermediate and deeper aquifers in this area. Once the surface casing cement grout had set and the surface casing was flushed of drilling fluids drilling was continued using mud rotary. All drilling fluids and soil cuttings were contained in 55-gallon DOT approved drums and eventually disposed by Cyclechem located in Elizabeth, New Jersey.

Monitoring well MW-11IR was installed at a depth of approximately 52 feet below grade within the "intermediate" aquifer and MW-11DR was installed on top of bedrock at a depth of approximately 157 feet below grade within the "deeper" aquifer. Refer to Appendix E for a log of soil boring MW-11DR and the well construction details. The wells were constructed of 2-inch inner diameter stainless steel well materials with 10 foot long 0.01 inch slotted well screens. A sand filter pack was installed around the well screen to approximately 5 to 6 feet above the slotted interval. A bentonite seal was placed from 5 to 18 feet above the top of the sand pack and the remaining annular space was grouted using a cement bentonite grout to the surface. The wells were finished at the surface with cemented "stick-up" protective well boxes.

Soil sampling was conducted in the deep boring (MW-11DR) using a split spoon to verify geology and the location of the clay layer. (MW-11IR was blind drilled to depth after MW-11DR was completed). Samples were collected continuously within the first 22 feet to determine the location of the clay layer. Below this depth, soil samples were collected every 5 to 10 feet until it was determined that representative samples could not be collected using a split spoon at a depth of approximately 72 feet below grade due to the amount of gravel within the formation. Once drilling was halted, to collect a split spoon sample, apparently the gravel

within the drilling mud settled above the sampling interval of interest preventing the collection of a representative sample. However, the drill cuttings were logged to determine geology below this depth. The boring log and well details are presented in Appendix F.

Previous geophysical logging in this area indicated that the base of the clay layer was present at a depth of approximately 16.5 feet below grade. However, based on visual identification of the collected soils samples, the clay layer was not observed at this depth, however a reddish-brown lean clay layer exists from approximately 6 to 10 feet below grade. The surface casing was installed regardless, to safeguard the intermediate and deeper aquifers from recirculating contaminated groundwater during mud rotary drilling.

Generally the soil samples were field screened with a photoionization detector (PID) and any odors noted to determine possible impact from the free product. However, a PID was not available while sampling the upper 22 feet of MW-11DR but indications of odors were noted. Odors were not observed in the samples collected from approximately 10 feet below grade.

The soil cuttings/air exhaust were screened with a PID during rotary air drilling to monitor volatile organic (VOC) concentrations for health and safety concerns as well. Soil cuttings were collected on plastic sheeting and then transferred to 55-gallon and eventually disposed by CycleChem.

The two monitoring wells were developed after they were installed to remove drilling fluids and increase hydraulic communication with the aquifer. Initially, development was conducted by the drilling company who removed approximately 150 gallons of drilling fluid from each replacement well. Several days later RMT alternately surged the screened zone and purged the wells until approximately 10 to 12 well volumes of water had been removed (85 gallons from MW-11IR and 260 gallons from MW-11DR). During development by RMT, indicator parameters were monitored and recorded. RMT development records are presented in Appendix F. Development fluids were contained in 55-gallon drums and eventually disposed by Cyclechem.



Section 6

MW-19/Hot Spot 1 Investigation

The MW-19 and Hot Spot 1 areas were the subject of an investigation that RMT conducted during the weeks of February 20 and 27, 1998. The investigation was conducted to define the extent of DEHP and VOC impacted groundwater as stipulated by the NJDEP in their letter dated January 20, 1998 and to comply with the requirement in the ROD to remediate these two "hot spots". The investigation consisted of installing five groundwater monitoring wells and sampling two existing wells and the five new wells. Please refer to the two investigation documentation reports titled "MW-19 Delineation" and "Hot Spot 1 Delineation" which were issued in June of 1998 for a detailed discussion of the investigation and the results.

Table 1
Product Thickness - EFR Wells
L.E. Carpenter, Wharton, New Jersey

EFR Event Date Well No.	Development November 21, 1998 Feet of Product	EFR #1 December 9, 1997 Feet of Product	EFR #2 January 7, 1998 Feet of Product	EFR #3 January 22, 1998 Feet of Product	EFR #4 February 17, 1998 Feet of Product	EFR #5 March 13, 1998 Feet of Product	EFR #6 March 27, 1998 Feet of Product
Western Portion of Plume							
EFR-1	1.64	1.53	1.94	0.36	2.48	0.93	0.94
EFR-2	1.55	1.50	1.86	0.06	2.20	2.96	2.92
EFR-3	0.85	1.02	1.27	--	1.58	1.19	0.03
EFR-17	0.04	0.17	1.56	0.39	0.17	0.08	--
EFR-18	0.10	0.10	0.09	--	--	--	--
EFR-20	0.40	0.34	0.95	0.47	0.27	--	--
EFR-21	2.36	2.40	2.71	2.74	2.74	4.14	3.97
EFR-28	2.20	2.30	1.78	0.48	2.60	3.20	3.48
Central Portion of Plume							
EFR-4	1.03	2.27	0.54	0.07	0.30	--	--
EFR-5	4.03	3.74	4.25	0.32	3.29	3.39	1.71
EFR-6	0.72	1.00	1.24	--	2.27	1.71	1.17
EFR-7	0.17	0.09	0.16	--	--	--	--
EFR-19	0.54	2.80	1.89	0.49	1.95	1.63	1.44
EFR-22	3.78	4.10	0.05	4.81	3.40	4.69	3.42
EFR-23	--	0.06	0.06	--	0.02	--	--
EFR-24	--	--	--	--	--	--	--
EFR-25	2.95	3.00	3.55	0.26	4.15	3.11	0.72
EFR-26	2.20	2.05	2.66	0.29	2.30	2.12	1.43
EFR-27	0.15	0.02	2.71	0.02	0.74	--	--
Eastern Portion of Plume							
EFR-8	--	--	--	--	0.08	--	--
EFR-9	--	1.10	1.79	1.15	0.16	3.08	0.08
EFR-10	5.20	5.80	6.42	2.34	7.47	7.06	6.05
EFR-11	3.07	4.04	4.28	5.64	4.47	4.32	4.67
EFR-12	0.04	0.03	--	--	0.07	--	--
EFR-13	0.48	0.56	1.33	0.05	1.28	1.07	1.07
EFR-14	0.10	0.16	--	--	--	--	--
EFR-15	0.09	0.12	0.27	--	0.06	--	--
EFR-16	--	--	--	--	--	--	--
Total Volume Removed (gal)	2,350	1,410	376	256	314	300	489
Estimated Total Free Product Removed (gal)	315	250	210	80	120	130	100
Cumulative Total Free Product Removed (gal)	315	565	775	855	975	1105	1205

Notes:

- 1) All product thicknesses were determined prior to the EFR event.
- 2) Note that the January 22, 1998 product thickness data was not used in the data analysis because of suspected measurement error.
- 3) gal = gallon
- 4) -- = Not detected

Table 2

First Quarter 1998 Groundwater Sampling Results

L.E. Carpenter, Wharton, New Jersey

Monitoring Well	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	Total Xylenes (ug/L)
MW-4	ND	ND	ND	ND
MW-14I	ND	ND	ND	ND
MW-15S	ND	ND	1.4	ND
MW-15I	ND	ND	ND	ND
MW-22	ND	4,070	348	20,600
MW-25	ND	0.33	ND	1.5
NJDEP GWQS (ug/L)	NA	700	1000	40
ROD Discharge Criteria (ug/L)	NA	350	500	20

Notes:

- 1) ug/L = micrograms per liter
- 2) NJDEP GWQS = New Jersey Groundwater Quality Standards
- 3) Values in bold are above both the NJDEP GWQS and the ROD Discharge Criteria
- 4) NA = Not Applicable

Table 3
Water Level Elevations (1st. QUARTER 1998)
L.E. Carpenter, Wharton, New Jersey

WELL LOCATION	LATITUDE	LONGITUDE	ELEVATION	OUTER CASING	INNER WELL	MEAS. DATE	PRODUCT DEPTH	WATER DEPTH	PRODUCT ELEVATION	WATER ELEVATION	PRODUCT THICKNESS	CORRECTED WATER LEVEL ELEVATIONS
CW-1	40° 54' 14.2"	74° 34' 34.7"	630.83	634.35	--	--	--	--	--	--	--	--
CW-3	40° 54' 13.8"	74° 34' 32.5"	628.63	633.30	--	--	--	--	--	--	--	--
DC-P0	--	--	625.75	--	--	--	--	--	--	--	--	--
DC-P1	--	--	625.24	--	--	--	--	--	--	--	--	--
DC-P2	--	--	626.91	--	--	--	--	--	--	--	--	--
DC-P3	--	--	625.22	--	--	--	--	--	--	--	--	--
DC-P4	--	--	625.12	--	--	--	--	--	--	--	--	--
DC-P5	--	--	625.17	--	--	--	--	--	--	--	--	--
GEI-1I	40° 54' 19.3"	74° 34' 35.3"	628.44	630.93	630.78	Mar-98	--	4.12	--	626.66	--	--
GEI-2 I	40° 54' 17.4"	74° 34' 43.1"	635.92	638.35	638.20	Mar-98	--	9.96	--	628.24	--	--
GEI-2 S	40° 54' 17.3"	74° 34' 43.0"	635.46	637.87	637.67	Mar-98	--	10.01	--	627.66	--	--
GEI-3 I	40° 54' 14.8"	74° 34' 43.7"	637.56	639.99	639.85	--	--	--	--	--	--	--
M.W.-1R	40° 54' 13.8"	74° 34' 38.8"	635.79	635.78	635.47	Mar-98	8.50	9.84	626.97	625.63	1.34	626.80
MW-2R	40° 54' 14.4"	74° 34' 33.1"	629.06	632.28	632.14	--	--	--	--	--	--	--
M.W.-3	40° 54' 14.0"	74° 34' 32.6"	628.64	632.27	632.56	Mar-98	6.11	6.36	626.45	626.20	0.25	626.42
M.W.-4	40° 54' 12.4"	74° 34' 34.4"	628.86	632.31	632.50	Mar-98	--	5.89	--	626.61	--	--
MW-6R	40° 54' 13.8"	74° 34' 34.1"	629.82	632.64	632.42	Mar-98	5.49	5.52	626.93	626.90	0.03	626.93
M.W.-8	40° 54' 12.7"	74° 34' 33.3"	627.99	630.56	628.79	Mar-98	--	2.56	--	626.23	--	--
M.W.-9	40° 54' 12.5"	74° 34' 35.1"	629.21	631.69	630.18	Mar-98	--	3.42	--	626.76	--	--
M.W.-11D (R)	40° 54' 14.2"	74° 34' 34.9"	630.66	633.35	633.09	--	--	--	--	--	--	--
M.W.-11I (R)	40° 54' 14.1"	74° 34' 34.9"	630.89	633.67	633.33	--	--	--	--	--	--	--
MW-12R	40° 54' 12.3"	74° 34' 35.9"	632.17	634.86	634.33	Mar-98	--	7.31	--	627.02	--	--
M.W.12 S	40° 54' 12.3"	74° 34' 36.0"	630.23	633.71	633.18	--	--	--	--	--	--	--
M.W.-13 I	40° 54' 15.1"	74° 34' 31.9"	628.36	630.88	630.66	Mar-98	--	4.18	--	626.48	--	--
MW-13R	40° 54' 15.0"	74° 34' 31.8"	628.26	630.96	630.59	Mar-98	--	4.37	--	626.22	--	--
M.W.-13 S	40° 54' 15.3"	74° 34' 31.7"	628.34	631.40	631.23	Mar-98	--	3.91	--	627.32	--	--
M.W.-14 I	40° 54' 14.2"	74° 34' 31.2"	625.93	628.32	628.23	--	--	--	--	--	--	--
M.W.-14 S	40° 54' 14.3"	74° 34' 31.0"	625.78	628.63	628.41	--	--	--	--	--	--	--
M.W.-15 I	40° 54' 15.0"	74° 34' 37.9"	634.74	636.88	636.66	Mar-98	--	9.80	--	626.86	--	--
M.W.-15 S	40° 54' 15.0"	74° 34' 38.0"	634.83	637.03	636.77	Mar-98	--	9.91	--	626.86	--	--
M.W.-16 I	40° 54' 16.0"	74° 34' 40.3"	632.43	635.08	634.96	Mar-98	--	7.48	--	627.48	--	--
M.W.-16 S	40° 54' 15.9"	74° 34' 40.4"	632.57	634.69	634.47	Mar-98	--	7.07	--	627.40	--	--

Table 3

Water Level Elevations (1st. QUARTER 1998)

L.E. Carpenter, Wharton, New Jersey

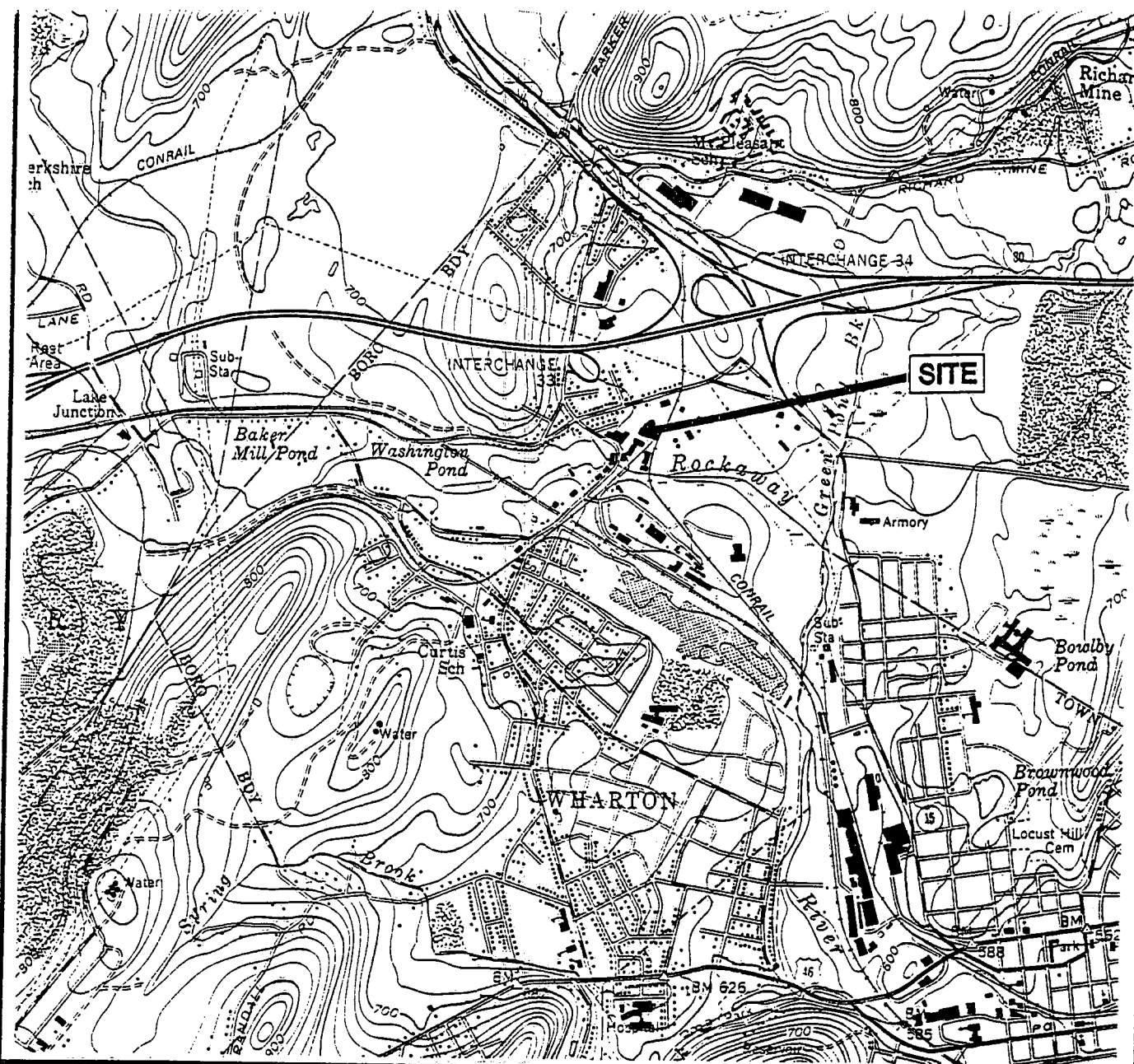
WELL LOCATION	LATITUDE	LONGITUDE	ELEVATION	OUTER CASING	INNER WELL	MEAS. DATE	PRODUCT DEPTH	WATER DEPTH	PRODUCT ELEVATION	WATER ELEVATION	PRODUCT THICKNESS	CORRECTED WATER LEVEL ELEVATIONS
M.W.-17 S	40° 54' 12.8"	74° 34' 39.7"	632.95	634.92	634.79	Mar-98	--	7.61	--	627.18	--	--
M.W.-18 I	40° 54' 18.4"	74° 34' 35.2"	628.35	631.19	631.04	Mar-98	--	4.34	--	626.70	--	--
M.W.-18 S	40° 54' 18.4"	74° 34' 35.0"	628.22	631.48	631.26	Mar-98	--	4.99	--	626.27	--	--
M.W.-19	40° 54' 17.1"	74° 34' 43.7"	636.72	639.24	638.88	Mar-98	--	11.08	--	627.80	--	--
M.W.-19-1	40° 54' 17.0"	74° 34' 44.0"	636.50	639.26	638.86	--	--	--	--	--	--	--
M.W.-19-2	40° 54' 17.2"	74° 34' 44.0"	637.05	639.36	638.76	--	--	--	--	--	--	--
M.W.-19-3	40° 54' 17.1"	74° 34' 44.5"	637.54	640.04	639.65	--	--	--	--	--	--	--
M.W.-19-4	40° 54' 16.7"	74° 34' 44.0"	636.27	638.44	637.74	--	--	--	--	--	--	--
M.W.-19-5	40° 54' 17.3"	74° 34' 43.5"	636.39	639.07	638.74	--	--	--	--	--	--	--
M.W.-20	40° 54' 17.2"	74° 34' 41.2"	634.82	637.03	636.77	Mar-98	--	7.35	--	629.42	--	--
M.W.-21	40° 54' 14.1"	74° 34' 28.2"	625.17	629.09	628.80	--	--	--	--	--	--	--
M.W.-22	40° 54' 13.7"	74° 34' 31.2"	625.94	628.31	628.13	--	--	--	--	--	--	--
M.W.-23	40° 54' 15.8"	74° 34' 30.5"	628.70	630.95	630.64	Mar-98	--	2.86	--	627.78	--	--
M.W.-25	40° 54' 13.7"	74° 34' 29.8"	625.25	627.37	627.22	--	--	--	--	--	--	--
MW-26	40° 54' 15.7"	74° 34' 34.3"	630.84	634.39	633.26	--	--	--	--	--	--	--
RP-1	--	--	629.65	--	--	--	--	--	--	--	--	--
RP-2	--	--	627.75	--	--	--	--	--	--	--	--	--
RP-3	--	--	627.11	--	--	--	--	--	--	--	--	--
RP-4	--	--	642.28	--	--	--	--	--	--	--	--	--
RW-1	40° 54' 13.6"	74° 34' 39.1"	635.19	637.81	637.38	Mar-98	10.41	11.29	626.97	626.09	0.88	626.86
RW-2	40° 54' 14.2"	74° 34' 32.8"	629.80	631.78	631.68	Mar-98	--	4.07	--	627.61	--	--
RW-3	40° 54' 14.9"	74° 34' 33.9"	629.89	632.15	631.99	--	--	--	--	--	--	--
WP-A1	40° 54' 13.9"	74° 34' 38.8"	636.29	636.32	635.81	Mar-98	8.61	10.75	627.20	625.06	2.14	626.92
WP-A2	40° 54' 14.2"	74° 34' 39.0"	637.31	639.62	639.19	Mar-98	--	12.46	--	626.73	--	--
WP-A3	40° 54' 13.7"	74° 34' 40.3"	635.97	635.97	635.56	--	--	--	--	--	--	--
WP-A4	40° 54' 14.0"	74° 34' 38.5"	635.63	635.66	635.10	--	--	--	--	--	--	--
WP-A5	40° 54' 14.4"	74° 34' 38.1"	635.70	--	637.85	--	--	--	--	--	--	--
WP-A6	40° 54' 13.6"	74° 34' 38.0"	634.95	--	637.28	--	--	--	--	--	--	--
WP-A7	40° 54' 13.7"	74° 34' 36.6"	632.94	--	634.88	--	--	--	--	--	--	--
WP-A8	40° 54' 14.3"	74° 34' 36.6"	634.70	--	637.56	--	--	--	--	--	--	--
WP-A9	40° 54' 13.6"	74° 34' 37.4"	637.22	--	639.32	--	--	--	--	--	--	--
WP-B1	40° 54' 13.9"	74° 34' 35.7"	631.85	--	633.65	--	--	--	--	--	--	--

Table 3

Water Level Elevations (1st. QUARTER 1998)

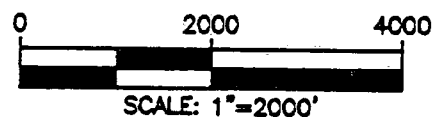
L.E. Carpenter, Wharton, New Jersey

WELL LOCATION	LATITUDE	LONGITUDE	ELEVATION	OUTER CASING	INNER WELL	MEAS. DATE	PRODUCT DEPTH	WATER DEPTH	PRODUCT ELEVATION	WATER ELEVATION	PRODUCT THICKNESS	CORRECTED WATER LEVEL ELEVATIONS
WP-B2	40° 54' 14.5"	74° 34' 35.1"	630.48	632.58	632.25	--	--	--	--	--	--	--
WP-B3	40° 54' 14.2"	74° 34' 35.4"	631.71	--	633.33	--	--	--	--	--	--	--
WP-B4	40° 54' 14.5"	74° 34' 34.5"	629.93	--	632.56	--	--	--	--	--	--	--
WP-B5	40° 54' 14.7"	74° 34' 34.2"	630.03	--	632.11	--	--	--	--	--	--	--
WP-B6	40° 54' 13.4"	74° 34' 33.7"	629.72	--	631.86	--	--	--	--	--	--	--
WP-B7	40° 54' 13.5"	74° 34' 32.3"	627.62	--	629.49	--	--	--	--	--	--	--
WP-B9	40° 54' 14.2"	74° 34' 33.5"	640.32	--	632.37	--	--	--	--	--	--	--
WP-B10	40° 54' 14.9"	74° 34' 34.7"	630.42	633.12	632.74	--	--	--	--	--	--	--
WP-C1	40° 54' 12.6"	74° 34' 36.1"	632.81	--	633.51	--	--	--	--	--	--	--
WP-C2	40° 54' 12.5"	74° 34' 35.6"	633.02	--	634.46	--	--	--	--	--	--	--
WP-C3	40° 54' 12.4"	74° 34' 36.4"	631.00	--	632.64	--	--	--	--	--	--	--
WP-C4	40° 54' 12.8"	74° 34' 35.9"	632.44	--	633.27	--	--	--	--	--	--	--
production well	40° 54' 13.0"	74° 34' 38.6"	634.43	635.41	--	--	--	--	--	--	--	--



QUADRANGLE LOCATION

SOURCE: BASE MAP FROM DOVER,
NEW JERSEY, 7.5 MINUTE USGS
QUADRANGLE, DATED 1981.



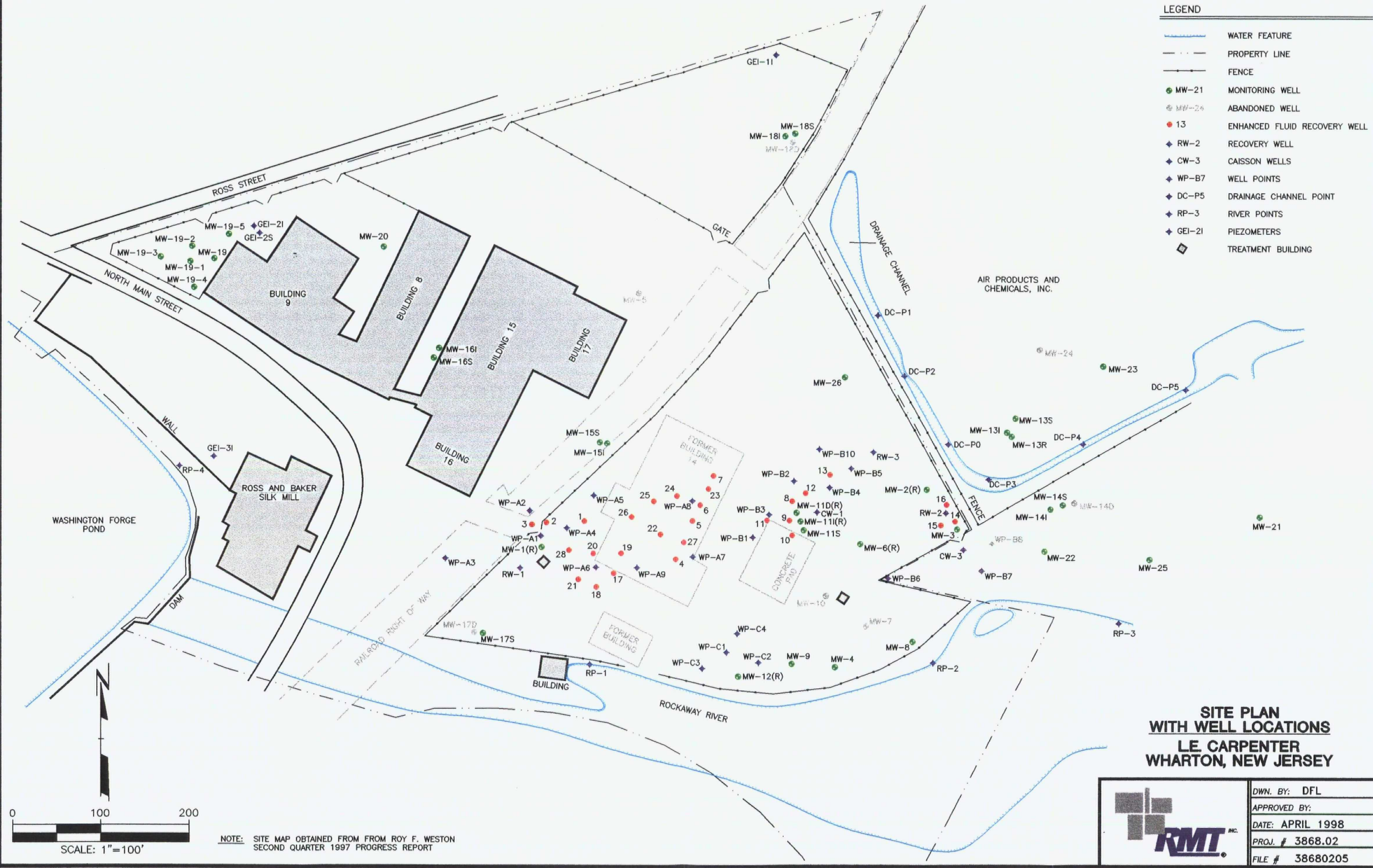
SITE LOCATOR MAP LE CARPENTER WHARTON, NEW JERSEY

RMT INC.


DWN. BY: DFL
APPROVED BY:
DATE: APRIL 1998
PROJ. # 3868.02
FILE # 38680208

FIGURE 1

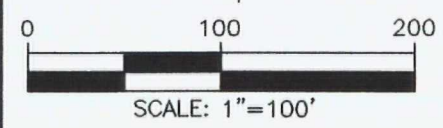
- LEGEND**
- WATER FEATURE
 - PROPERTY LINE
 - FENCE
 - MW-21 MONITORING WELL
 - MW-24 ABANDONED WELL
 - 13 ENHANCED FLUID RECOVERY WELL
 - RW-2 RECOVERY WELL
 - CW-3 CAISSON WELLS
 - WP-B7 WELL POINTS
 - DC-P5 DRAINAGE CHANNEL POINT
 - RP-3 RIVER POINTS
 - GEI-21 PIEZOMETERS
 - TREATMENT BUILDING



**SITE PLAN
WITH WELL LOCATIONS
LE CARPENTER
WHARTON, NEW JERSEY**

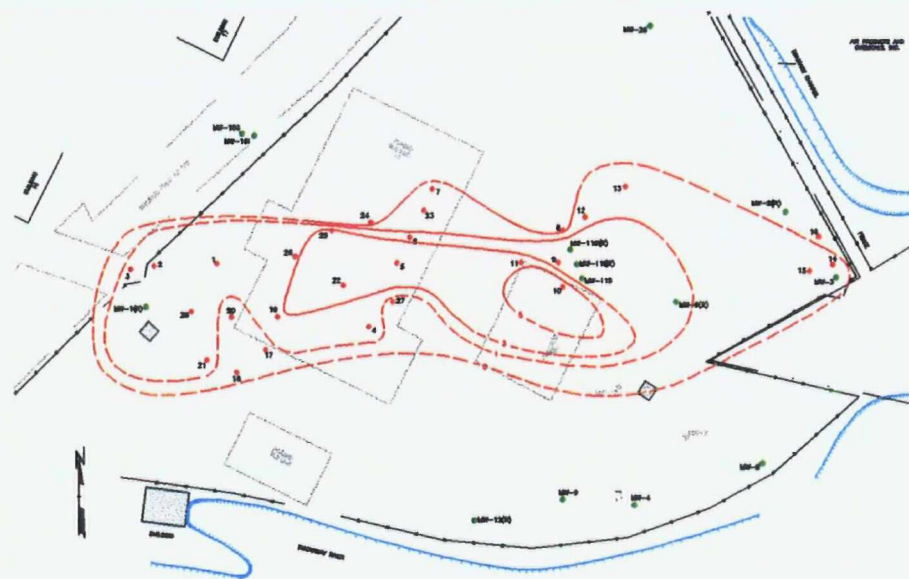
	DWN. BY: DFL
	APPROVED BY:
	DATE: APRIL 1998
	PROJ. # 3868.02
	FILE # 38680205

NOTE: SITE MAP OBTAINED FROM FROM ROY F. WESTON
SECOND QUARTER 1997 PROGRESS REPORT

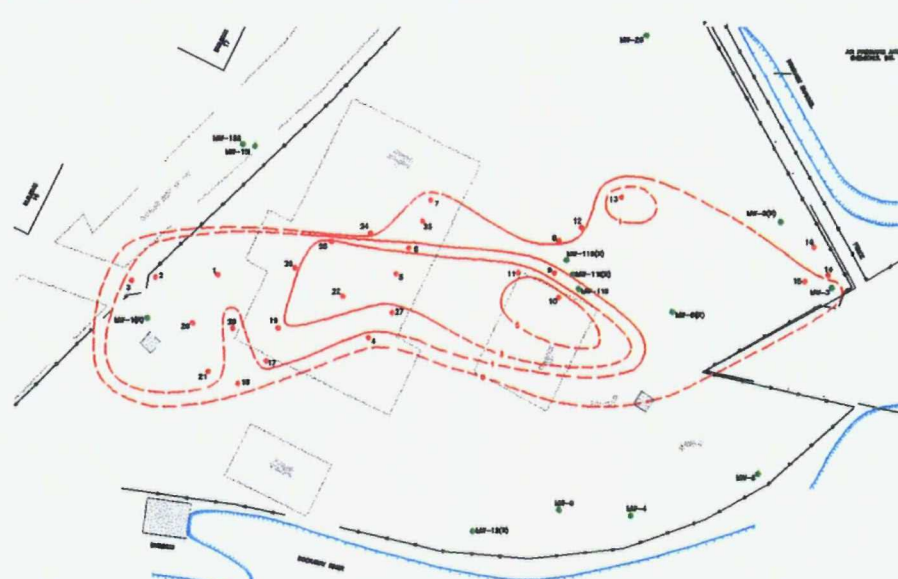


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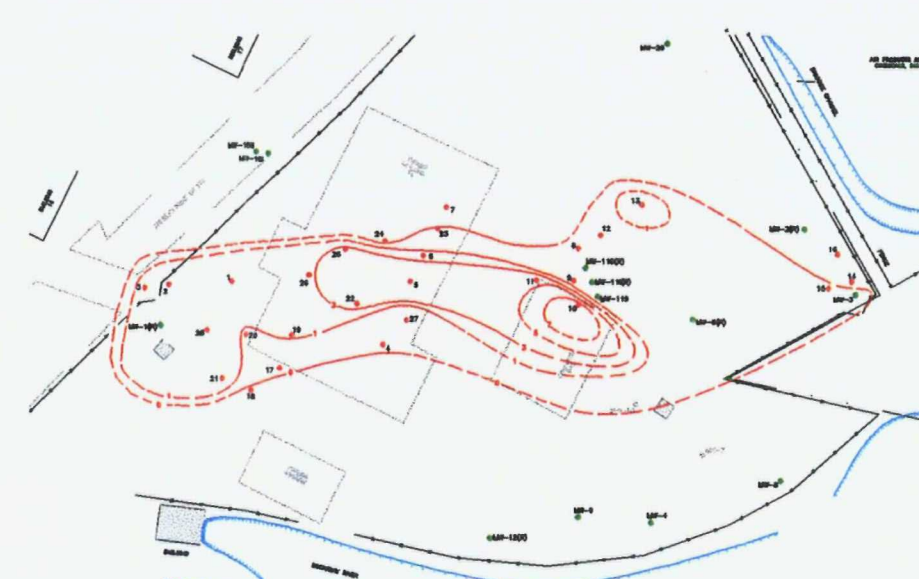
FIGURE 2



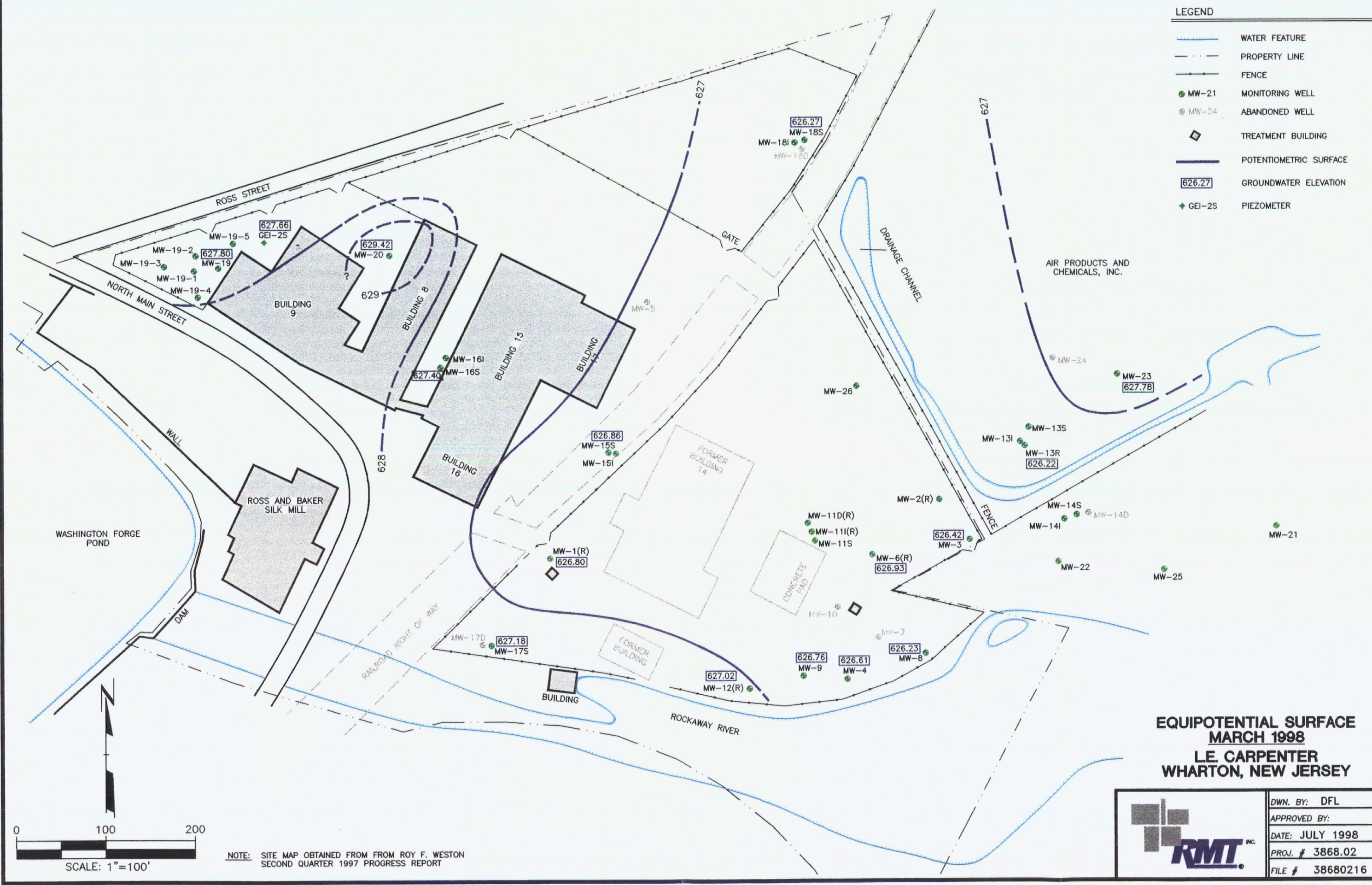
**EFR EVENT #1
(DECEMBER 9, 1997)**



**EFR EVENT #2
(JANUARY 7, 1998)**



- LEGEND**
- WATER FEATURE
 - PROPERTY LINE
 - FENCE
 - MW-21 MONITORING WELL
 - MW-24 ABANDONED WELL
 - TREATMENT BUILDING
 - POTENTIOMETRIC SURFACE
 - 626.27 GROUNDWATER ELEVATION
 - GEI-2S PIEZOMETER



**EQUIPOTENTIAL SURFACE
MARCH 1998
LE CARPENTER
WHARTON, NEW JERSEY**

	DWN. BY: DFL
	APPROVED BY:
	DATE: JULY 1998
	PROJ. # 3868.02
	FILE # 38680216

NOTE: SITE MAP OBTAINED FROM FROM ROY F. WESTON
SECOND QUARTER 1997 PROGRESS REPORT

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 Plot Date:
 Plot Time:
 Attached Xref's:
 Drawing Name:
 Operator Name:
 Scale:

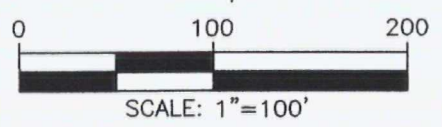
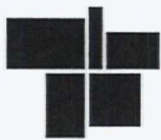


FIGURE 4



Appendix A
Copy of New Jersey DEP Letter Dated
January 28, 1998



FEB - 2

C.R. AND

Christine Todd Whitman
Governor

State of New Jersey
Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

Mr. Cristopher Anderson
Director, Environmental Affairs
L.E. Carpenter & Company
200 Public Square
Suite 36-5000
Cleveland, OH 44114-2304

JAN 28 1998

Dear Mr. Anderson:

Re: L.E. Carpenter Superfund Site
Wharton, Morris County

On June 24, 1997 Roy F. Weston, Inc. (Weston) sent a letter to the New Jersey Department of Environmental Protection which proposed replacement, repair, and abandonment of several monitoring wells. Weston began this work prior to obtaining the Department's approval, and subsequently abandoned two monitoring wells (MW-11I and MW-11D) of which the Department did not approve. These wells would be useful to monitor the hydraulic conditions when recharge of treated ground water will occur. When this was told to Weston by telephone, the abandonment had already been completed. However, Weston stated that in the case of MW-11I, the well screen completely penetrated a clay layer, so the ground water samples from this well may not be representative of a specific zone, and in the case of MW-11D, the well screen was not set in a specific aquifer zone. Therefore, these wells were not serving their intended purpose and had to be abandoned.

It has come to the Department's attention that field work to delineate the MW-19 area will begin shortly. Since the well drilling equipment will be at the site, the Department is requesting that L.E. Carpenter install two new wells in the vicinity of where MW-11I and MW-11D were located during this field work event. One well should be screened in the intermediate zone and the other in the deep zone.

In addition, the Department has reviewed the Second Quarter 1997 Progress Report and has the following comments:

1. Section 1.4.1 - It is stated that ground water samples were collected in accordance with the protocols provided in the Department's "Field Sampling Procedures Manual" dated May 1992 and EPA's "Low Flow (Minimal Drawdown) Ground-Water Sampling Procedures" dated December 1995. The document further states the ground water samples were collected with a peristaltic pump upon completion of well purging.

The Department prohibits the use of peristaltic pumps to obtain ground water samples contaminated with volatile organic compounds. The use of this pump will strip off the volatile fraction, resulting in "non-detect"

or significantly reduced contaminant levels leading to erroneous conclusions concerning the extent of ground water contamination. Please refer to pages 173 and 177 of "Field Sampling Procedures Manual" where the use of peristaltic and other suction lift pumps for sampling ground water contaminated with volatile organic compounds is discussed. Accordingly, the Department requires that L.E. Carpenter adhere to the Department's requirements for collecting ground water samples. Should future sampling events not follow the correct procedures, the data will be rejected.

2. The ditch has not been sampled, which was proposed in the Aquifer Testing Protocol. This sampling must occur, since it was approved by the Department, or justification provided otherwise.

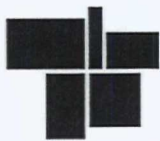
Please feel free to contact me at (609) 633-7261 if you have any questions.

Sincerely,



Gwen Barunas, P.E.
Case Manager
Bureau of Federal Case Management

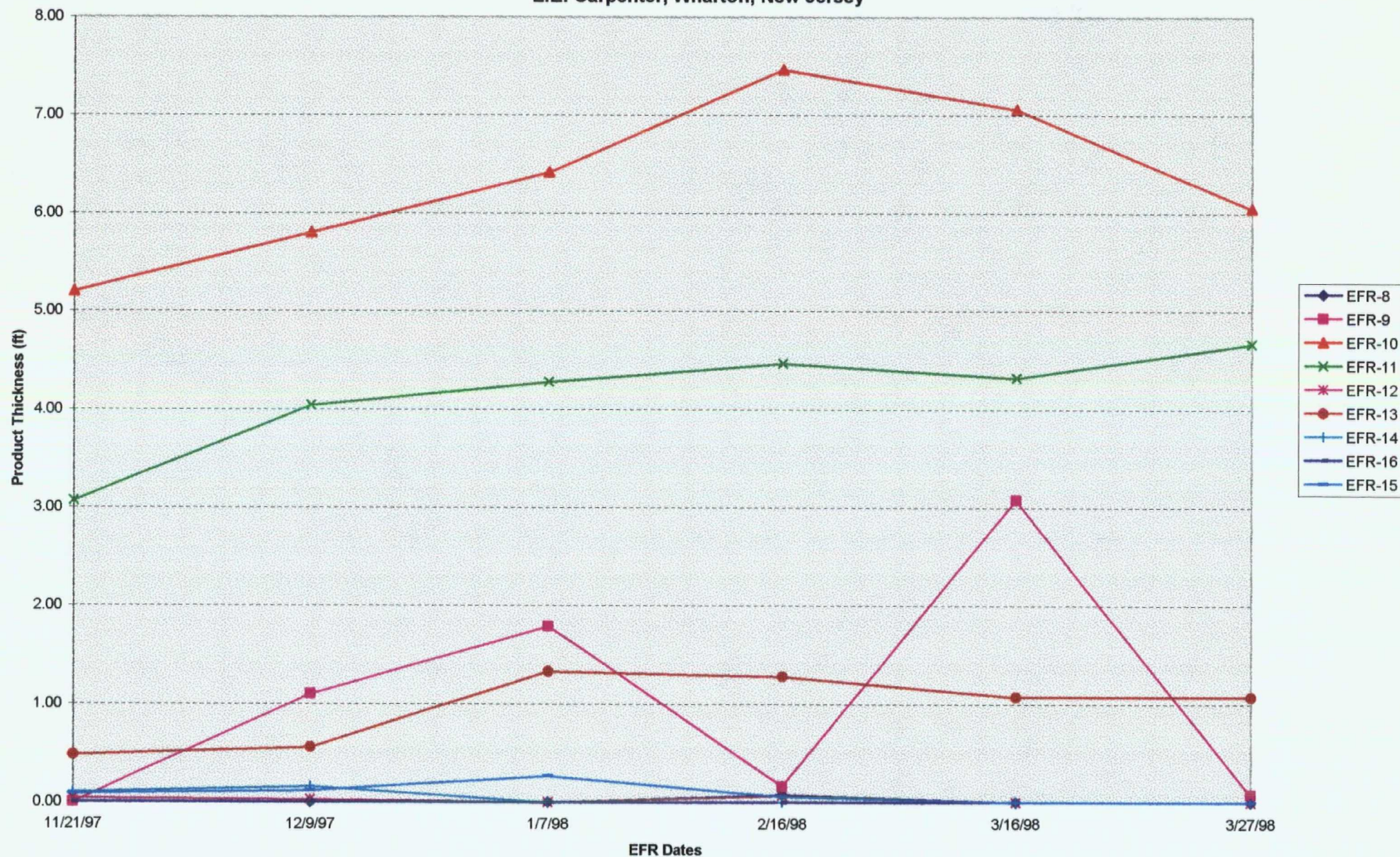
c: Stephen Cipot, USEPA
George Blyskun, BGWPA
John Prendergast, BEERA



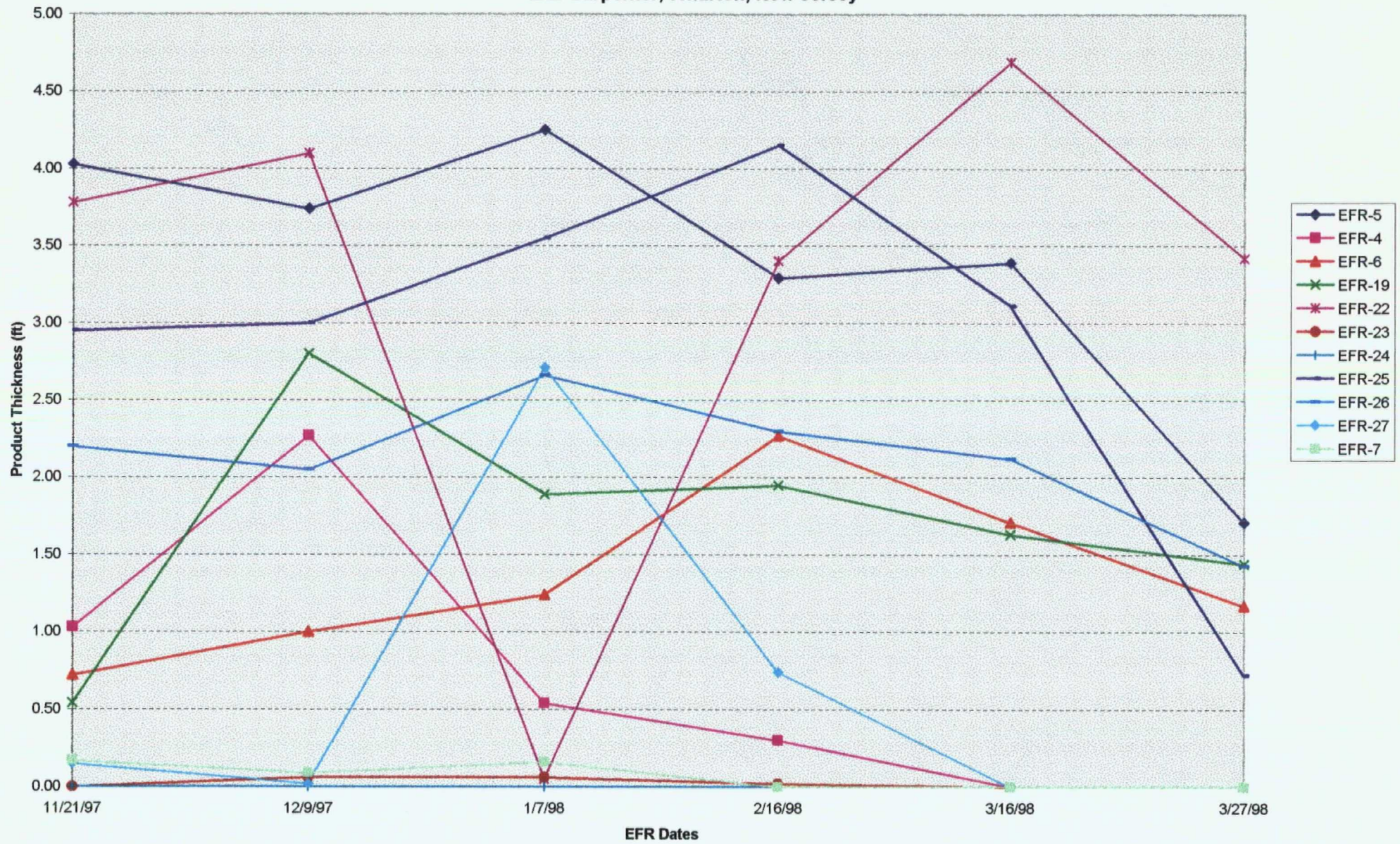
Appendix B

Free Product Fluctuation Charts

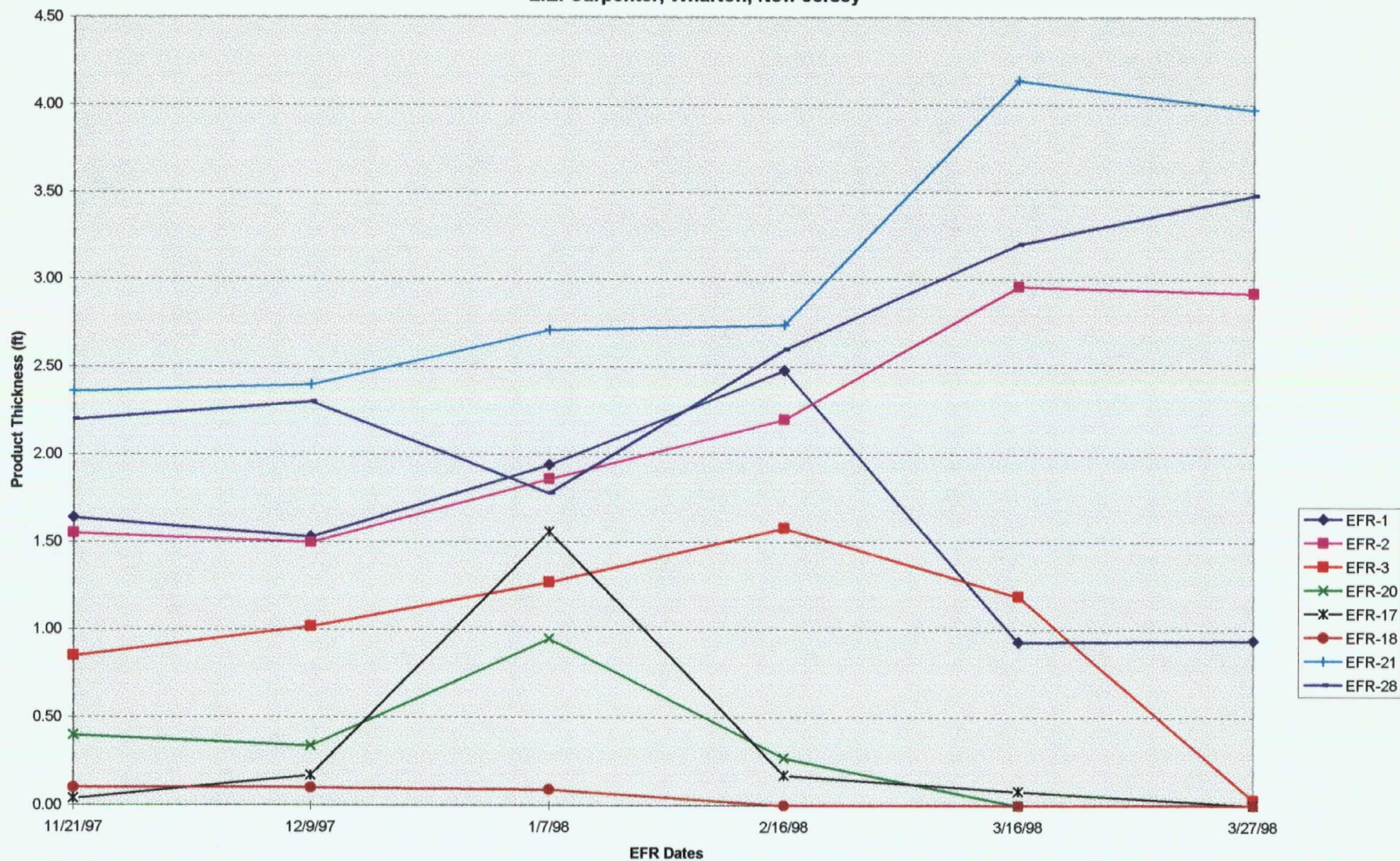
Free Product Changes vs. Time
 Eastern Portion of Plume
 L.E. Carpenter, Wharton, New Jersey



Free Product Changes vs. Time
Central Portion of Plume
L.E. Carpenter, Wharton, New Jersey



Free Product Changes vs. Time
Western Portion of Plume
L.E. Carpenter, Wharton, New Jersey

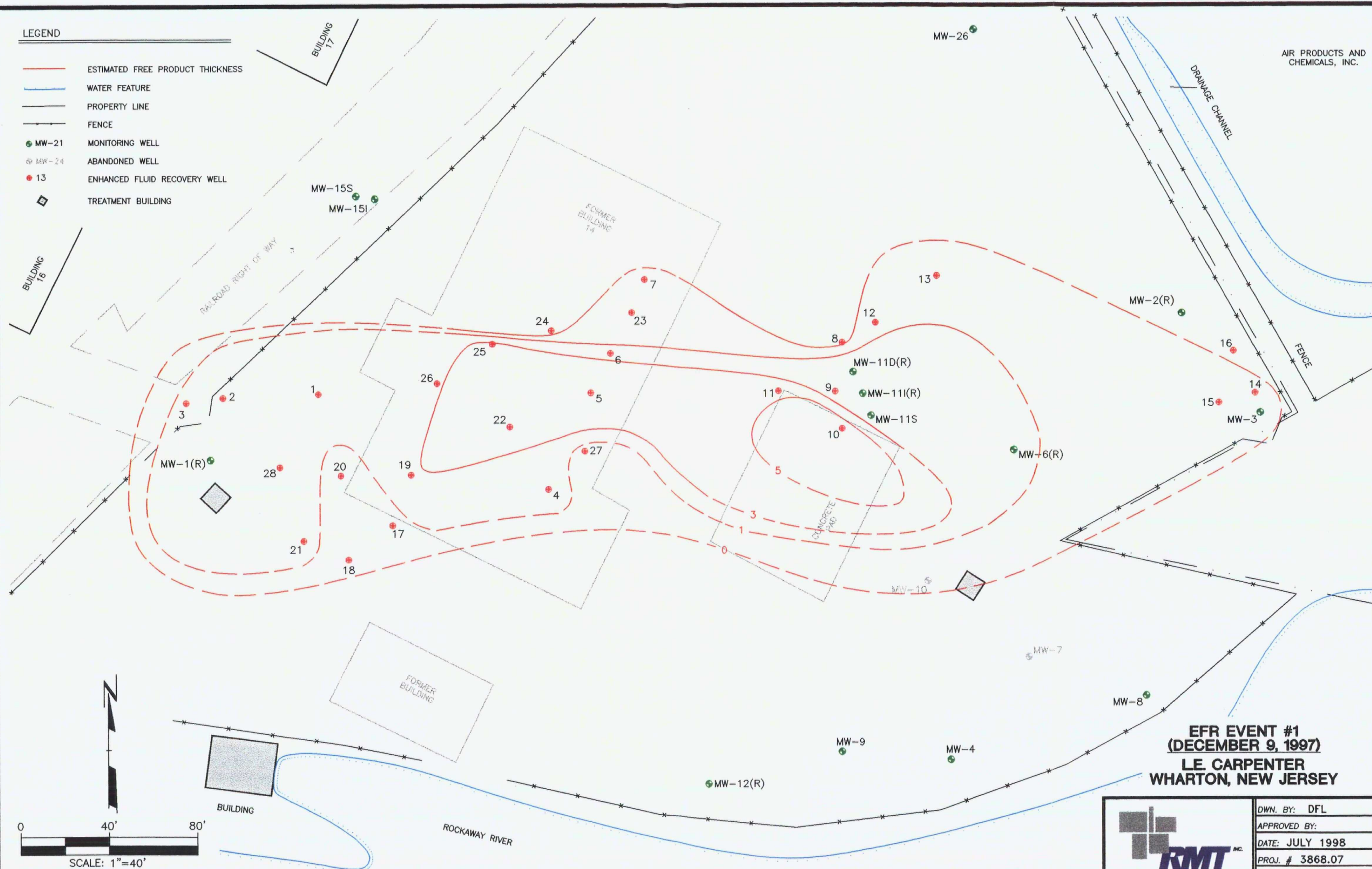
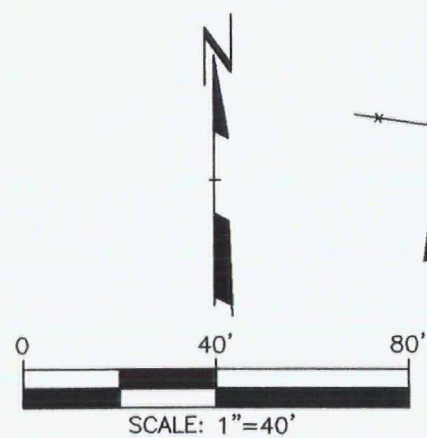


- LEGEND**
- ESTIMATED FREE PRODUCT THICKNESS
 - WATER FEATURE
 - PROPERTY LINE
 - FENCE
 - MW-21 MONITORING WELL
 - MW-24 ABANDONED WELL
 - 13 ENHANCED FLUID RECOVERY WELL
 - TREATMENT BUILDING

AIR PRODUCTS AND
CHEMICALS, INC.

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Plot Time: x x
Attached Xref's: x

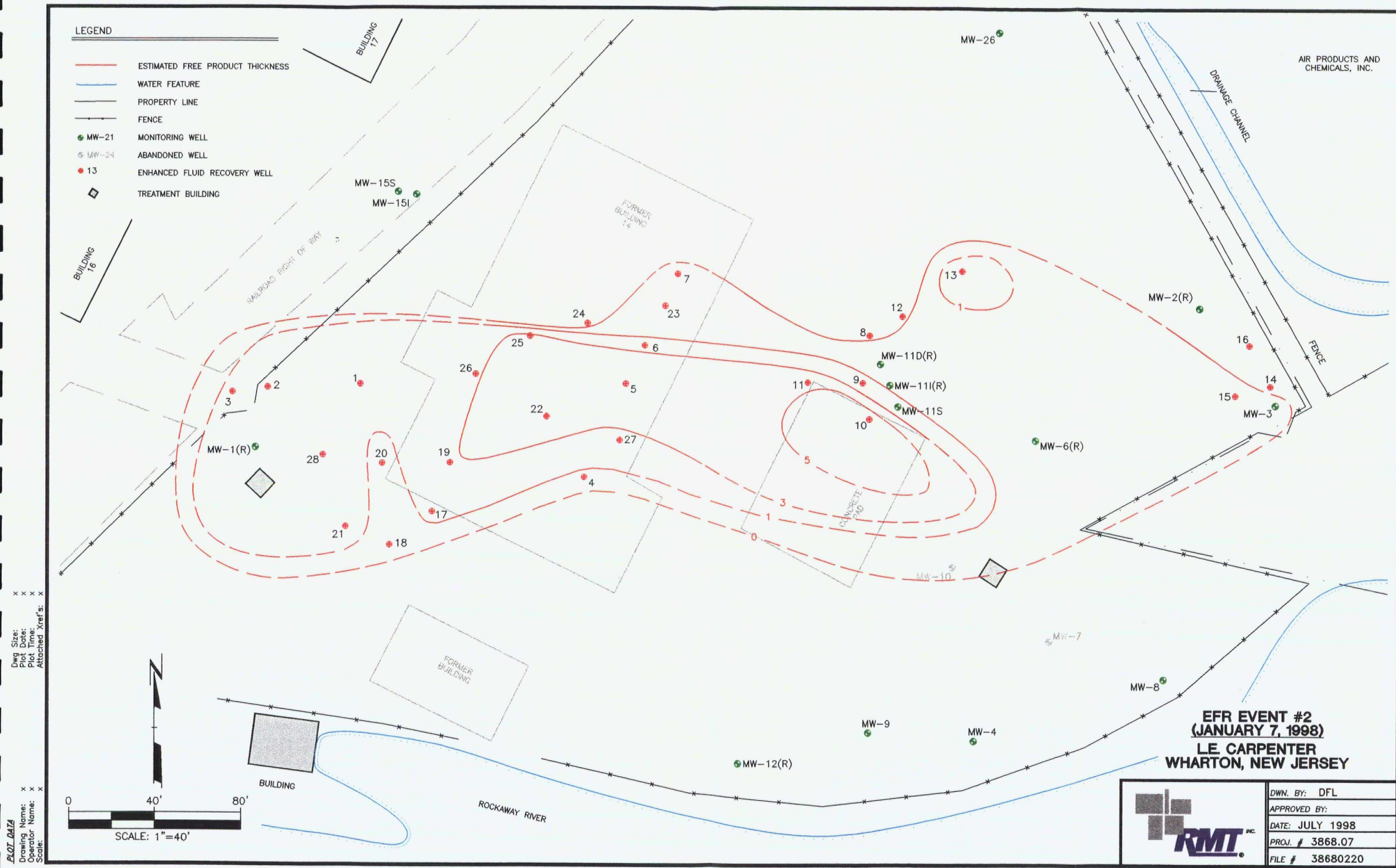
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**EFR EVENT #1
(DECEMBER 9, 1997)
LE. CARPENTER
WHARTON, NEW JERSEY**



DWN. BY: DFL
APPROVED BY:
DATE: JULY 1998
PROJ. # 3868.07
FILE # 38680218



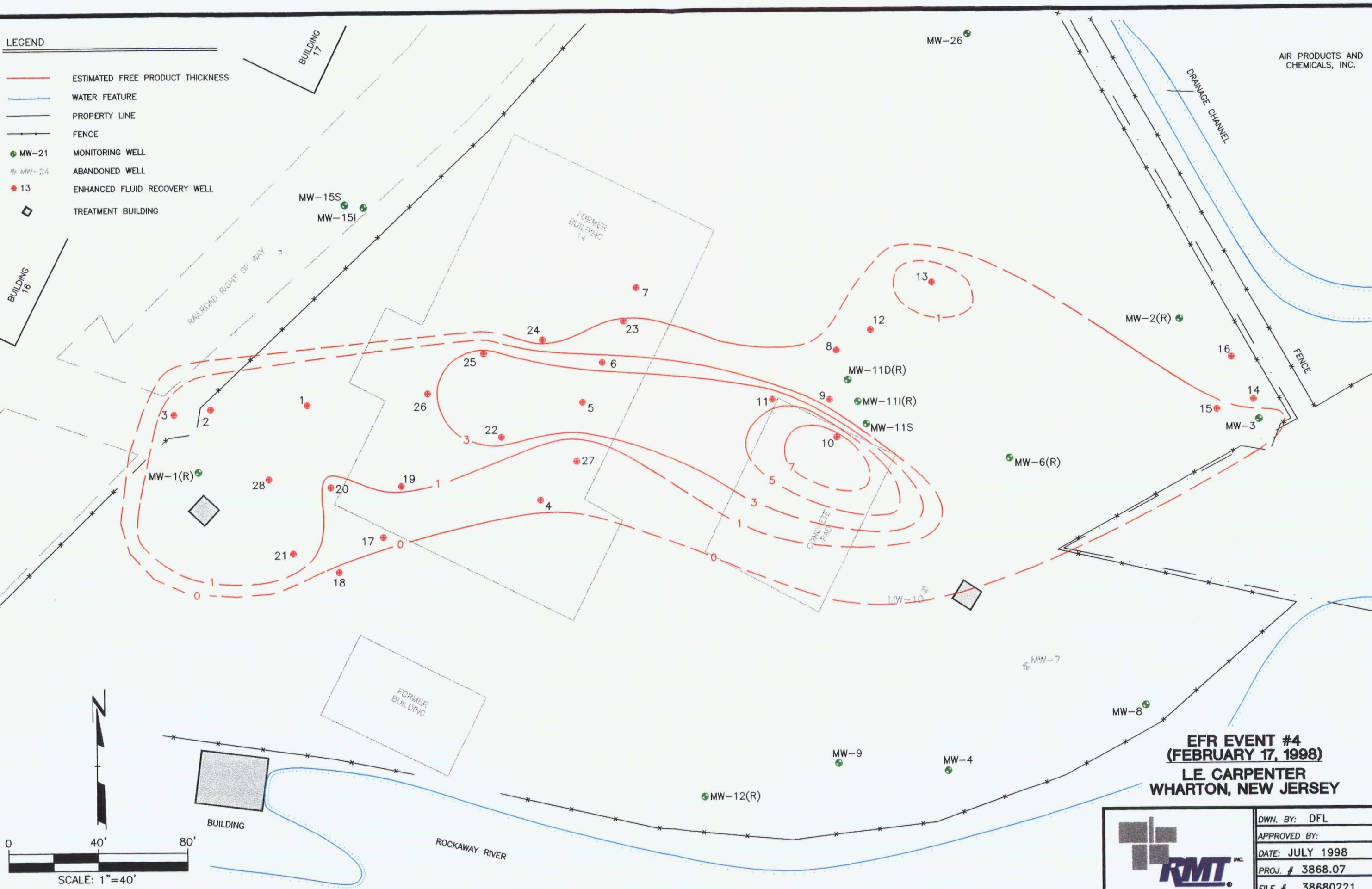
PLOT DATA

- LEGEND**
- ESTIMATED FREE PRODUCT THICKNESS
 - WATER FEATURE
 - PROPERTY LINE
 - FENCE
 - MW-21 MONITORING WELL
 - ⊙ MW-24 ABANDONED WELL
 - 13 ENHANCED FLUID RECOVERY WELL
 - ◻ TREATMENT BUILDING

AIR PRODUCTS AND
CHEMICALS, INC.

Dwg. Size: x x x
Plot Date: x x x
Plot Time: x x x
Attached Xrefs: x

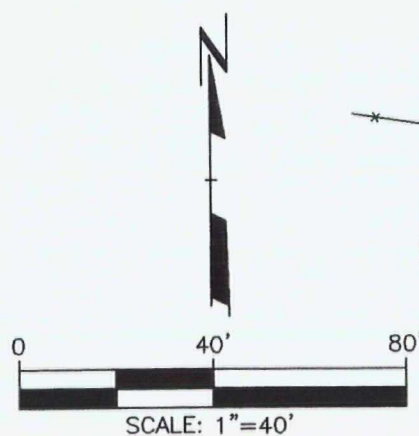
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**EFR EVENT #4
(FEBRUARY 17, 1998)
LE CARPENTER
WHARTON, NEW JERSEY**

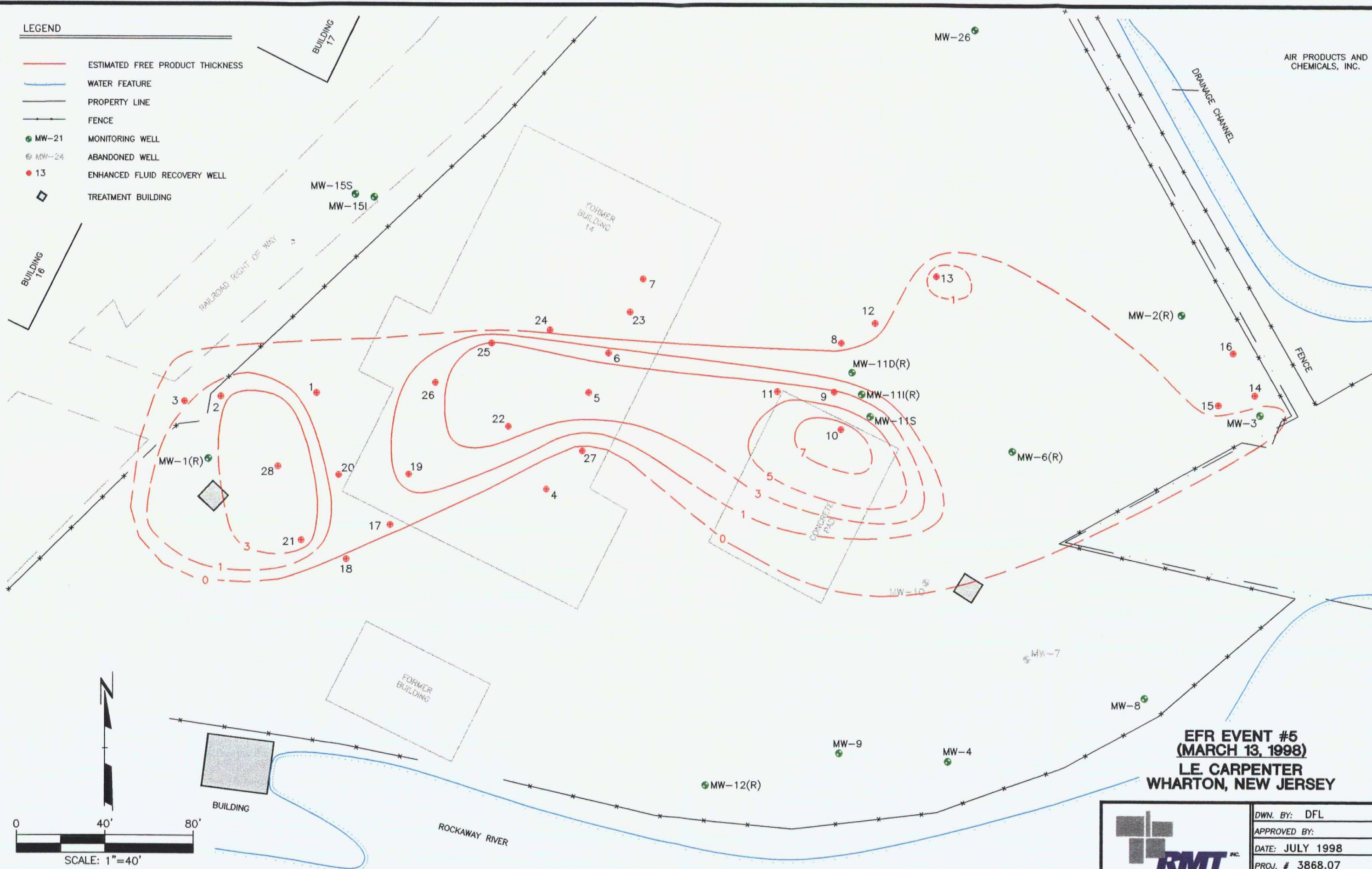


DWN. BY:	DFL
APPROVED BY:	
DATE:	JULY 1998
PROJ. #	3868.07
FILE #	38680221



- LEGEND**
- ESTIMATED FREE PRODUCT THICKNESS
 - WATER FEATURE
 - PROPERTY LINE
 - FENCE
 - MW-21 MONITORING WELL
 - MW-24 ABANDONED WELL
 - 13 ENHANCED FLUID RECOVERY WELL
 - ◊ TREATMENT BUILDING

AIR PRODUCTS AND
CHEMICALS, INC.



**EFR EVENT #5
(MARCH 13, 1998)
LE CARPENTER
WHARTON, NEW JERSEY**



DWN. BY:	DFL
APPROVED BY:	
DATE:	JULY 1998
PROJ. #	3868.07
FILE #	38680222

PLOT DATA
 Dwg Size: x x x
 Plot Date: x x x
 Plot Time: x x x
 Attached Xref's: x x x
 Drawing Name: x x x
 Operator Name: x x x
 Scale: x x x

LEGEND

- ESTIMATED FREE PRODUCT THICKNESS
- WATER FEATURE
- PROPERTY LINE
- FENCE
- MW-21 MONITORING WELL
- MW-24 ABANDONED WELL
- 13 ENHANCED FLUID RECOVERY WELL
- ◻ TREATMENT BUILDING



AIR PRODUCTS AND
CHEMICALS, INC.

**EFR EVENT #6
(MARCH 27, 1998)
LE CARPENTER
WHARTON, NEW JERSEY**



DWN. BY:	DFL
APPROVED BY:	
DATE:	JULY 1998
PROJ. #	3868.07
FILE #	38680217

Dwg Size: x x x
Plot Date: x x x
Plot Time: x x x
Attached Xref's: x

PLOT DATA
Drawing Name: x x x
Operator Name: x x x
Scale: x x x



Appendix C

Well Sampling Data

Monitoring Well Data

Client: RMTProject: LE CarpenterJob No: C 022Date Sampled: 3/12/98Analyst: R. Toogood

Well ID	MW-19-1	MW-19-2	MW-19-3	MW-19-4	MW-19-5	MW-15S	MW-15I	MW-14I	MW-22
Depth to Water From TOC feet (before purging)	10.91	10.94	11.64	9.60	11.03	9.79	9.68	2.00	2.20
Depth to Water From TOC feet (after purging)	11.98	11.36	12.34	12.02	11.37	9.38	9.71	2.11	5.91
Depth to Water From TOC feet (before sampling)	10.08	11.00	11.81	10.05	11.11	9.81	9.68	2.00	2.21
Depth to Bottom From TOC feet	18.00	17.83	17.80	17.82	18.30	19.48	40.14	43.32	8.81
PID Reading from Well Casing (ppm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
pH before Purge	7.20	6.95	7.00	6.65	7.04	4.95	6.78	8.18	7.35
Temp. before Purge (°C)	7.3	7.1	6.5	7.4	5.8	5.8	3.9	7.3	6.5
Diss. Oxygen before Purge (ppm)	2.1	2.2	4.3	4.2	3.8	9.6	4.8	3.9	1.3
Cond. before Purge (umhos/cm)	600	690	710	990	150	60	150	160	350
Water Volume in Well (gal.)	4.63	4.49	4.02	5.36	1.18	6.32	4.97	6.74	1.07
Purge Method	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump
Purge Start Time	9:26	9:33	9:09	9:07	9:44	10:50	10:50	11:56	11:58
Purge End Time	9:42	9:51	9:31	9:25	9:50	11:13	11:09	12:26	12:03
Purge Rate (gpm)	0.9	0.8	0.5	0.8	0.7	0.8	0.8	0.7	0.6
Volume Purged (gal.)	14	14	13	17	4	19	15	21	4
pH after Purge	7.21	6.84	7.02	6.70	6.79	6.75	7.03	8.14	7.32
Temp. after Purge (°C)	8.4	8.7	8.7	8.9	7.4	8.6	8.8	9.8	6.4
Diss. Oxygen after Purge (ppm)	3.0	2.3	4.5	4.8	2.0	3.8	1.8	3.9	2.7
Cond. after Purge (umhos/cm)	650	750	680	1,000	240	100	240	180	360
pH after Sample	7.18	6.91	6.95	6.68	6.92	6.94	7.31	8.30	7.33
Temp. after Sample (°C)	6.7	7.6	8.0	8.1	6.1	8.4	8.6	8.8	6.1
Diss. Oxygen after Sampling (ppm)	4.1	3.0	5.8	5.6	2.8	4.8	2.3	3.4	2.4
Cond. after Sample (umhos/cm)	690	750	700	1,000	230	100	230	180	360
Sampling Method	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer
Time of Sampling	10:08	10:17	10:02	9:56	11:23	11:22	11:16	12:42	12:30

Monitoring Well Data

Client: RMTProject: LE CarpenterJob No: C 022Date Sampled: 3/12/98Analyst: R. Toogood

Well ID	MW-19-1	MW-19-2	MW-19-3	MW-19-4	MW-19-5	MW-15S	MW-15I	MW-14I	MW-22
Depth to Water From TOC feet (before purging)	10.91	10.94	11.64	9.60	11.03	9.79	9.68	2.00	2.20
Depth to Water From TOC feet (after purging)	11.98	11.36	12.34	12.02	11.37	9.38	9.71	2.11	5.91
Depth to Water From TOC feet (before sampling)	10.08	11.00	11.81	10.05	11.11	9.81	9.68	2.00	2.21
Depth to Bottom From TOC feet	18.00	17.83	17.80	17.82	18.30	19.48	40.14	43.32	8.81
PID Reading from Well Casing (ppm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
pH before Purge	7.20	6.95	7.00	6.65	7.04	4.95	6.78	8.18	7.35
Temp. before Purge (°C)	7.3	7.1	6.5	7.4	5.8	5.8	3.9	7.3	6.5
Diss. Oxygen before Purge (ppm)	2.1	2.2	4.3	4.2	3.8	9.6	4.8	3.9	1.3
Cond. before Purge (umhos/cm)	600	690	710	990	150	60	150	160	350
Water Volume in Well (gal.)	4.63	4.49	4.02	5.36	1.18	6.32	4.97	6.74	1.07
Purge Method	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump
Purge Start Time	9:26	9:33	9:09	9:07	9:44	10:50	10:50	11:56	11:58
Purge End Time	9:42	9:51	9:31	9:25	9:50	11:13	11:09	12:26	12:03
Purge Rate (gpm)	0.9	0.8	0.5	0.8	0.7	0.8	0.8	0.7	0.6
Volume Purged (gal.)	14	14	13	17	4	19	15	21	4
pH after Purge	7.21	6.84	7.02	6.70	6.79	6.75	7.03	8.14	7.32
Temp. after Purge (°C)	8.4	8.7	8.7	8.9	7.4	8.6	8.8	9.8	6.4
Diss. Oxygen after Purge (ppm)	3.0	2.3	4.5	4.8	2.0	3.8	1.8	3.9	2.7
Cond. after Purge (umhos/cm)	650	750	680	1,000	240	100	240	180	360
pH after Sample	7.18	6.91	6.95	6.68	6.92	6.94	7.31	8.30	7.33
Temp. after Sample (°C)	6.7	7.6	8.0	8.1	6.1	8.4	8.6	8.8	6.1
Diss. Oxygen after Sampling (ppm)	4.1	3.0	5.8	5.6	2.8	4.8	2.3	3.4	2.4
Cond. after Sample (umhos/cm)	690	750	700	1,000	230	100	230	180	360
Sampling Method	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer
Time of Sampling	10:08	10:17	10:02	9:56	11:23	11:22	11:16	12:42	12:30

Monitoring Well Data

Client: RMTProject: LE CarpenterJob No: C 022Date Sampled: 3/12/98Analyst: R. Toogood

Well ID	MW-25	MW-4
Depth to Water From TOC feet (before purging)	2.00	5.73
Depth to Water From TOC feet (after purging)	8.97	6.31
Depth to Water From TOC feet (before sampling)	1.74	5.81
Depth to Bottom From TOC feet	9.11	18.31
PID Reading from Well Casing (ppm)	0.0	0.0
pH before Purge	7.37	6.83
Temp. before Purge (°C)	4.5	3.4
Diss. Oxygen before Purge (ppm)	2.2	2.9
Cond. before Purge (umhos/cm)	340	255
Water Volume in Well (gal.)	1.16	2.05
Purge Method	peristaltic pump	peristaltic pump
Purge Start Time	12:08	13:18
Purge End Time	12:13	13:25
Purge Rate (gpm)	0.8	1.0
Volume Purged (gal.)	4	7
pH after Purge	7.47	6.99
Temp. after Purge (°C)	6.1	4.8
Diss. Oxygen after Purge (ppm)	1.8	2.4
Cond. after Purge (umhos/cm)	350	260
pH after Sample	7.55	6.92
Temp. after Sample (°C)	4.8	3.6
Diss. Oxygen after Sampling (ppm)	2.5	3.9
Cond. after Sample (umhos/cm)	340	250
Sampling Method	teflon bailer	teflon bailer
Time of Sampling	12:34	13:36



Appendix D

Groundwater Analytical Results

ENVIROTECH RESEARCH, INC.

Client ID: MW-14I
Site: L.E. Carpenter

Lab Sample No: 49163
Lab Job No: C022

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Analyzed: 03/22/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid9958.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-22
Site: L.E. Carpenter

Lab Sample No: 49164
Lab Job No: C022

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Analyzed: 03/22/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid9959.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1000.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	200
Toluene	348	140
Ethylbenzene	4070	140
Xylene (Total)	20600	500

ENVIROTECH RESEARCH, INC.

Client ID: MW-15S
Site: L.E. Carpenter

Lab Sample No: 49161
Lab Job No: C022

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Analyzed: 03/22/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid9956.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.20
Toluene	1.4	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-15I
Site: L.E. Carpenter

Lab Sample No: 49162
Lab Job No: C022

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Analyzed: 03/22/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid9957.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-25
Site: L.E. Carpenter

Lab Sample No: 49165
Lab Job No: C022

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Analyzed: 03/22/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid9960.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	0.33	0.14
Xylene (Total)	1.5	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-4
Site: L.E. Carpenter

Lab Sample No: 49166
Lab Job No: C022

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Analyzed: 03/22/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid9961.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 2.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.40
Toluene	ND	0.28
Ethylbenzene	ND	0.28
Xylene (Total)	ND	1.0

ENVIROTECH RESEARCH, INC.

Client ID: MW-Dup
Site: L.E. Carpenter

Lab Sample No: 49167
Lab Job No: C022

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Analyzed: 03/22/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid9962.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	0.39	0.14
Xylene (Total)	0.94	0.50

ENVIROTECH RESEARCH, INC.

Client ID: Field Blank
Site: L.E. Carpenter

Lab Sample No: 49168
Lab Job No: C022

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Analyzed: 03/22/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid9947.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: Trip_Blank
Site: L.E. Carpenter

Lab Sample No: 49169
Lab Job No: C022

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Analyzed: 03/22/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid9946.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID METHOD 602

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: **Field Blank**
Site: L.E. Carpenter

Lab Sample No: **49168**
Lab Job No: **C022**

Date Sampled: 03/12/98
Date Received: 03/12/98
Date Extracted: 03/19/98
Date Analyzed: 03/26/98
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t6922.d

Matrix: WATER
Level: LOW
Sample Volume: 910 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS METHOD 625

<u>Parameter</u>	<u>Analytical Result</u> <u>Units: ug/l</u>	<u>Method Detection</u> <u>Limit</u> <u>Units: ug/l</u>
bis(2-Ethylhexyl)phthalate	ND	1.2

ENVIROTECH RESEARCH INC.

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

PAGE ____ OF ____

Name (for report and invoice) <i>Jarvis Van Nortwick</i>		Samplers Name (Printed) <i>R. Teague M. Morse</i>		Site/Project Identification <i>L.E. Carpenter</i>																					
Company <i>Residuals Management Technologies</i>		P.O. #		State (Location of site): NJ: <input checked="" type="checkbox"/> NY: <input type="checkbox"/> Other:																					
Address <i>999 Plaza Drive, Suite 370</i>		Analysis Turnaround Time Standard <input type="checkbox"/> Rush Charges Authorized For: 2 Week <input type="checkbox"/> 1 Week <input type="checkbox"/> Other <input type="checkbox"/>		ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)												LAB USE ONLY Project No: <i>801080</i> Job No: <i>C022</i>									
City <i>Schaumburg</i> State <i>IL</i> Zip <i>60173-5407</i>				6/15/18 (GC) B1 (2.5+1.0+1.0+1.0) with 1st																					
Phone Fax																Sample Numbers									
Sample Identification		Date	Time	Matrix	No. of Cont.													Sample Numbers							
MW 19-1		3/12/18	10:08	Am	4	x	x											49155							
MW 19-2			10:17		4	x	x											49156							
MW 19-3			10:22		4	x	x											49157							
MW 19-4 (w/QA)			9:55		6	x	x											49158							
MW 19-5			11:23		4	x	x											49159							
MW DUP 19			11:22		4	x	x											49160							
MW 15S			11:22		3	x												49161							
MW 15 I			11:16		3	x												49162							
MW 14 I			12:42		3	x												49163							
MW 22		✓	12:30	✓	3	x												49164							
Preservation Used: 1 = ICE, 2 = HCl, 3 = H ₂ SO ₄ , 4 = HNO ₃ , 5 = NaOH 6 = Other _____, 7 = Other _____														Soil:											
														Water:		1, 2 1									

Special Instructions

Water Metals Filtered (Yes/No)?

Relinquished by 1) <i>[Signature]</i>	Company <i>Envirotech</i>	Date / Time 3/12/18 1	Received by 1) <i>[Signature]</i>	Company <i>ENVIROTECH</i>
Relinquished by 2)	Company	Date / Time 	Received by 2)	Company
Relinquished by 3)	Company	Date / Time 	Received by 3)	Company
Relinquished by 4)	Company	Date / Time 	Received by 4)	Company

Laboratory Certifications: New Jersey (12543), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

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Water Metals Filtered (Yes/No)?

Laboratory Certifications: New Jersey (12543), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).



Appendix E

NJDEP Well Reports/Records

SERIAL # 000004

DWR-133M (10/96)

Mail to

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

NJDEP
Bureau Water Allocation
CN 426
Trenton, NJ 08625-0426

MONITORING WELL PERMIT

VALID ONLY AFTER APPROVAL BY THE D.E.P.

Permit No.

COORD #:

Owner LE Corporation
Address 1301 E. 9th St, Suite 3600
Cincinnati, OH 45114
Name of Facility LE Corporation
Address 170 N. Main St.
Cincinnati, OH

Driller AUT-M. D. Atlantic, Inc.
Address 100 Lexington Ave.
Trenton, NJ 08618

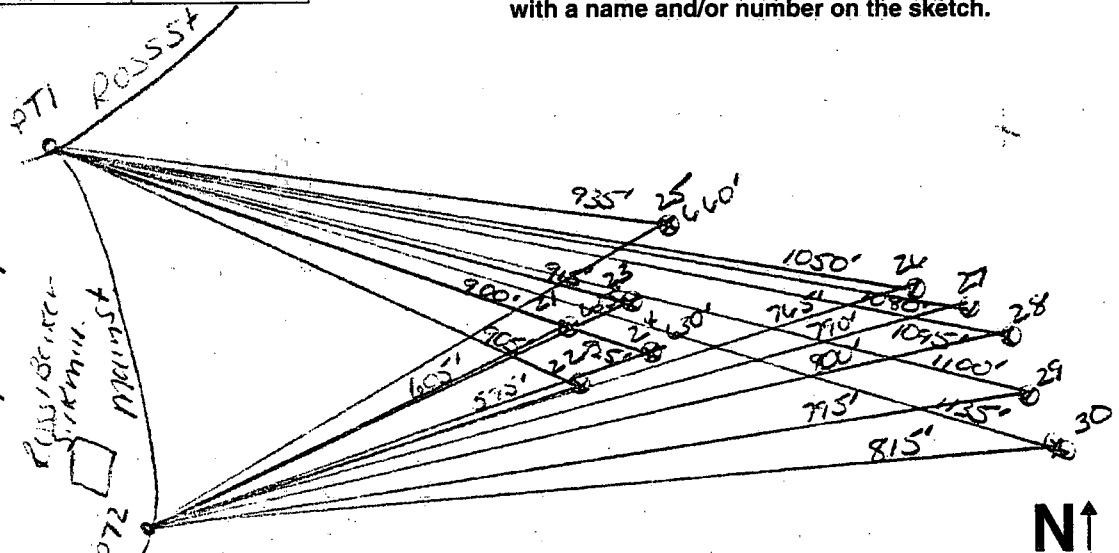
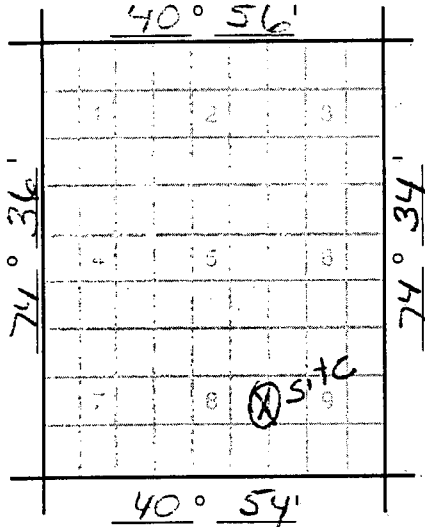
Diameter of Well(s)	4	Inches	Proposed Depth of Well(s)	20	Feet
# of Wells Applied for (max. 10)	10		Will pumping equipment be installed?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
Type of Well (see reverse)	monitoring		If Yes, give pump capacity	WT	cumulative GPM

LOCATION OF WELL(S)

Lot # 3 Block # 0801 Municipality Cincinnati County Montgomery

Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.

State Atlas Map No. 25



FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT. PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- ☐ Spill Site
- ☐ ISRA Site
- ☒ CERCLA (Superfund) Site
- ☐ RCRA Site
- ☐ Underground Storage Tank Site
- ☐ Operational Ground Water Permit Site
- ☐ Pretreatment and Residuals Site
- ☐ Water and Hazardous Waste Enforcement Case
- ☐ Water Supply Aquifer Test Observation Well
- ☐ Other (explain) _____

CASE I.D. Number

00002163748

This Space for Approval Stamp

WELL PERMIT APPROVED
N.J.D.E.P.

SEP 10 1997

BUREAU OF WATER ALLOCATION

FOR
D.E.P.
USE

- ☐ Issuance of this permit is subject to the conditions attached. (see next page)
- ☒ For monitoring purposes only

☒ The well(s) may not be completed with more than 25 feet of total screen or uncased borehole.

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS AND REGULATIONS PERTAINING TO THIS PERMIT.

In compliance with N.J.S.A. 58:4A-14, application is made for a permit to drill a well as described above.

Date 9.9.97

Signature of Driller

James Moore

Registration No.

01471

Signature of Owner

Owner for street address Agent for

COPIES:

Water Allocation — White

Health Dept. — Yellow

Owner — Blue

Driller — White

MONITORING WELL RECORD

Well Permit No. 25 51279Atlas Sheet Coordinates 25 02 386

OWNER IDENTIFICATION - Owner L E CARPENTER
Address 1301 E 9TH ST SUITE 3000
City CLEVELAND State OH Zip Code 44114

WELL LOCATION - If not the same as owner please give address. Owner's Well No. NEW 1
County MOHAWK Municipality WHARTON BORO Lot No. 3 Block No. 0801
Address 170 N MAIN ST

TYPE OF WELL (as per Well Permit Categories) MONITORING
Regulatory Program Requiring Well CRICLA Case I.D.# NJ000158748
DATE WELL STARTED 3/12/98
DATE WELL COMPLETED 2/20/98

CONSULTING FIRM/FIELD SUPERVISOR (if applicable) ROBT STEVENS Tele. # 847-7751

WELL CONSTRUCTION

Total depth drilled 165 ft.
Well finished to 156 ft.

Borehole diameter:
Top 10 in.
Bottom 6 in.

Well was finished: ☐ above grade
☐ flush mounted

If finished above grade, casing height (stick up) above land surface 2 ft.

Was steel protective casing installed?
☐ Yes ☐ No

Static water level after drilling 4 ft.

Water level was measured using 1" tube

Well was developed for 42 hours
at 100 gpm

Method of development surge

Was permanent pumping equipment installed? ☐ Yes ☒ No

Pump capacity 100 gpm

Pump type: 1" tube

Drilling Fluid WGL Type of Rig TOWER

Health and Safety Plan submitted? ☒ Yes ☐ No

Level of Protection used on site (circle one) None (D) C B A

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company APT-ATLANTIC INC.

Well Driller (Print) John J. ...

Driller's Signature [Signature]

Registration No. 1201 Date 1/20/98

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	12	140	2	SP-1	2.100
Middle Casing (for triple cased wells only)	-	-	-	-	-
Outer Casing (largest diameter)	12	20	6 3/4	SP-1	1.200
Open Hole or Screen (No. Used)	140	156	2	Screen	1.100
Blank Casings (No. Used)	2	20	2	Blank	-
Tail Piece	-	-	-	-	-
Gravel Pack	140	156	60	Gravel	1.100
Grout	156	165	2	Neat Cement Bentonite	1.100 lbs. 25 lbs.

Grouting Method neat cement
Drilling Method air rotary

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations.

0-10' SILT
10-15' SILT
15-20' SILT
20-25' SILT
25-30' SILT
30-35' SILT
35-40' SILT
40-45' SILT
45-50' SILT
50-55' SILT
55-60' SILT
60-65' SILT
65-70' SILT
70-75' SILT
75-80' SILT
80-85' SILT
85-90' SILT
90-95' SILT
95-100' SILT
100-105' SILT
105-110' SILT
110-115' SILT
115-120' SILT
120-125' SILT
125-130' SILT
130-135' SILT
135-140' SILT
140-145' SILT
145-150' SILT
150-156' SILT



Appendix F

MW-11IR/MW-11DR Well Log, Construction, and Development Details



LOG OF TEST BORING

BORING NO. MW-11DR
SHEET NO. 1 OF 5
PROJECT NO. 3868.03
INSTALLATION 2/20/98
SURFACE ELEV. ---
BOREHOLE DIA. 10 IN/6 IN.

PROJECT NAME L. E. Carpenter
LOCATION Warton, NJ
CONTRACTOR Aquifer Testing & Drilling
DRILLING METHOD Air Rotary Hammer

SAMPLING NOTES						WELL CONSTR	
INTERVAL		RECOVERY		PID	DEPTH		VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
NO.	TYPE	N	IN	ppm			
A	SS	86 100/3	3		5	WELL GRADED SAND WITH GRAVEL (SW), fine to coarse grained sand and gravel, trace silt and clay, gray, wet, hydrocarbon odor.	
B	SS	58 100/3	4		10	LEAN CLAY WITH SAND (CL), little to some gravel, reddish brown.	
C	SS		4			WELL GRADED SAND WITH GRAVEL (SW), fine to coarse grained sand.	
D	SS		6			SAME AS ABOVE	
E	SS				15	SAME AS ABOVE, with trace amounts of silt and clay.	
F	SS		6			WELL GRADED SAND (SW), with trace to little gravel, gray, fine to coarse grained sand.	
G	SS		6		20	SAME AS ABOVE	
H	SS		6			SAME AS ABOVE, black.	
					25	Note: set a six inch I. D. steel casing from ground surface to 18.5 feet below grade.	

GENERAL NOTES				WATER LEVEL OBSERVATIONS			
DATE STARTED <u>2-16-98</u>				WHILE DRILLING <u>▽</u>			
DATE COMPLETED <u>2-20-98</u>				AT COMPLETION <u>▽</u>			
RIG <u>Reach Drill T650W</u>				AFTER DRILLING			
CREW CHIEF <u>Jeff Jaworski</u>				CAVE-IN: DATE/TIME _____ DEPTH _____			
LOGGED <u>E.M.V.</u> CHECKED <u>S.C.</u>				WATER: DATE/TIME _____ DEPTH _____			

N3LEW 38683 4-10-98



LOG OF TEST BORING

BORING NO. MW-11DR
SHEET NO. 2 OF 5
PROJECT NO. 3868.03
INSTALLATION 2/20/98
SURFACE ELEV. ---
BOREHOLE DIA. 10 IN/6 IN.

PROJECT NAME L. E. Carpenter
LOCATION Warton, NJ
CONTRACTOR Aquifer Testing & Drilling
DRILLING METHOD Air Rotary Hammer

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	WELL CONSTR
INTERVAL		RECOVERY		PID ppm	DEPTH		
NO.	TYPE	N	IN				
I	SS		10			WELL GRADED GRAVEL WITH SAND (GW), fine to coarse gravel, coarse sand.	
					35		
					40	SAME AS ABOVE	
J	SS		24				
					45	SAME AS ABOVE	
K	SS		20				
					50	SAME AS ABOVE	
L	SS		16				
					55	POORLY GRADED GRAVEL (GP)	
M	SS		24				
					60		
N	SS		24				
					65		

N3LBW 38683 4-10-98

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 3. **Results**
 4. **Discussion**
 5. **Conclusion**
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 216. **Figure 207**
 217. **Figure 208**

BORING NO. MW-11DR
SHEET NO. 3 OF 5
PROJECT NO. 3868.03
INSTALLATION 2/20/98
SURFACE ELEV. ---
BOREHOLE DIA. 10 IN/6 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	WELL CONSTR
INTERVAL		RECOVERY		PID	DEPTH		
NO.	TYPE	N	IN	ppm			
O	SS		18		70	SAME AS ABOVE, with clayey fragments in spoon tip.	
					75	NOTE: the driller believes that the split spoon samples may be biased with too much gravel due to settling when the mud pump is turned off prior to collecting split spoon sample. All soil description from below 72 feet is from mud cutting observation.	
	DM				85	FINE TO COARSE SAND, little gravel. (DM means drilling mud sample)	
	DM				95	SAME AS ABOVE	
					100		

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LOG OF TEST BORING

BORING NO. MW-11DR
SHEET NO. 4 OF 5
PROJECT NO. 3868.03
INSTALLATION 2/20/98
SURFACE ELEV. ---
BOREHOLE DIA. 10 IN/6 IN.

PROJECT NAME L. E. Carpenter
LOCATION Warton, NJ
CONTRACTOR Aquifer Testing & Drilling
DRILLING METHOD Air Rotary Hammer

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	WELL CONSTR
INTERVAL		RECOVERY		PID	DEPTH		
NO.	TYPE	N	IN	ppm			
	DM				105	SAME AS ABOVE	
	DM				115	SAME AS ABOVE	
	DM				125	SAME AS ABOVE	
	DM				135	SAME AS ABOVE	

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LOG OF TEST BORING

BORING NO. MW-11DR
SHEET NO. 5 OF 5
PROJECT NO. 3868.03
INSTALLATION 2/20/98
SURFACE ELEV. ---
BOREHOLE DIA. 10 IN/6 IN.

PROJECT NAME L. E. Carpenter
LOCATION Warton, NJ
CONTRACTOR Aquifer Testing & Drilling
DRILLING METHOD Air Rotary Hammer

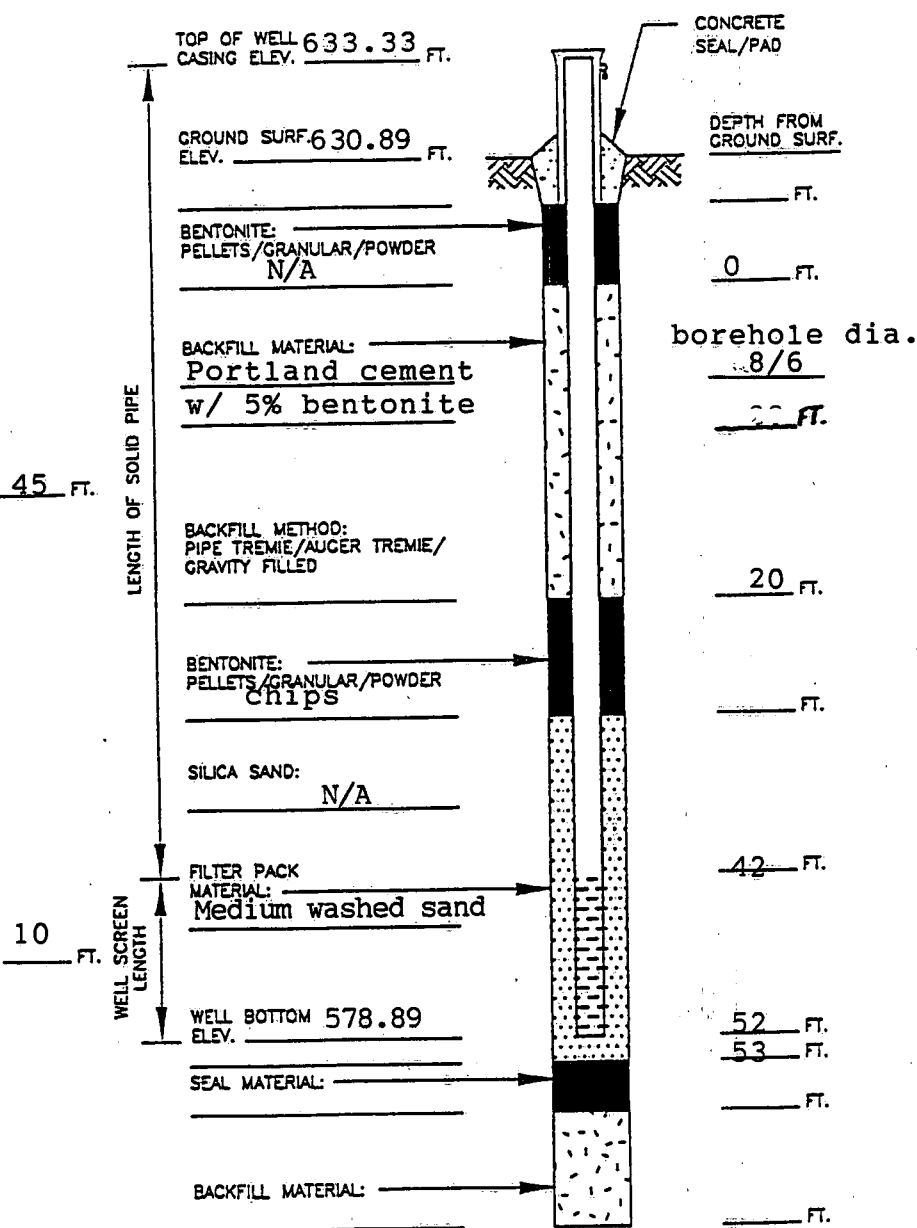
SAMPLING NOTES					DEPTH	VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	WELL CONSTR
INTERVAL NO.	TYPE	RECOVERY		PID ppm			
		N	IN				
					140		
					145		
	DM					SAME AS ABOVE	
					150		
					155		
	DM					Granite bedrock at 156 feet. Drilled to 165 feet.	
					160		
					165	END OF BORING AT 165 FEET	
						Well MW-11DR set to a depth of 157 feet. Well MW-11DI set to a depth of 52 feet in a separate boring.	
					170		



Well Diagram
F-17 (9-94)

PROJECT NAME : L. E. Carpenter
PROJECT NO. : 3868.03
LOCATION: Wharton, New Jersey
DATE INSTALLED : 2/23/98
WELL NO. MW-11IR
PREPARED BY: _____

MONITORING WELL CONSTRUCTION



1) CASING DETAILS

A) TYPE OF PIPE:

PVC / STAINLESS / TEFLON / OTHER

PIPE SCHEDULE #304

PIPE DIAMETER I.D. 2 IN. O.D. _____ IN.

B) TYPE OF PIPE JOINTS:

SLIP / THREADED (W/TAPE ?) / OTHER _____

SOLVENT CEMENT: YES OR NO

C) TYPE OF WELL SCREEN:

PVC / STAINLESS / TEFLON / OTHER _____

SLOT SIZE: .01 IN.

SCREEN DIA.: I.D. IN. 2 O.D. IN. _____

D) INSTALLED PROTECTOR PIPE W/LOCK ? YES OR NO

PROTECTOR PIPE DIA. _____ IN. LOCK NO. _____

2) WELL DEVELOPMENT

A) METHOD

BAILING/PUMPING/SURGING/COMPRESSED AIR/OTHER

B) TIME SPENT FOR DEVELOPMENT 15 minutes

C) APPROXIMATE WATER VOLUME: REMOVED 240 gallons
ADDED _____

D) WATER CLARITY:

BEFORE DEVELOPMENT -

CLEAR / TURBID / OPAQUE

AFTER DEVELOPMENT -

CLEAR / SLIGHTLY TURBID / TURBID / OPAQUE

E) ODOR ? YES OR NO

3) WATER LEVEL SUMMARY

A) DEPTH FROM TOP OF CASING AFTER DEVELOPMENT ?

6.5 FT. OR DRY

B) OTHER MEASUREMENTS (T.O.C.):

DATE / TIME _____ DEPTH _____

DATE / TIME _____ DEPTH _____

DATE / TIME _____ DEPTH _____

ADDITIONAL COMMENTS: Surface casing set to 18 ft. BGL
(65/8" ID)

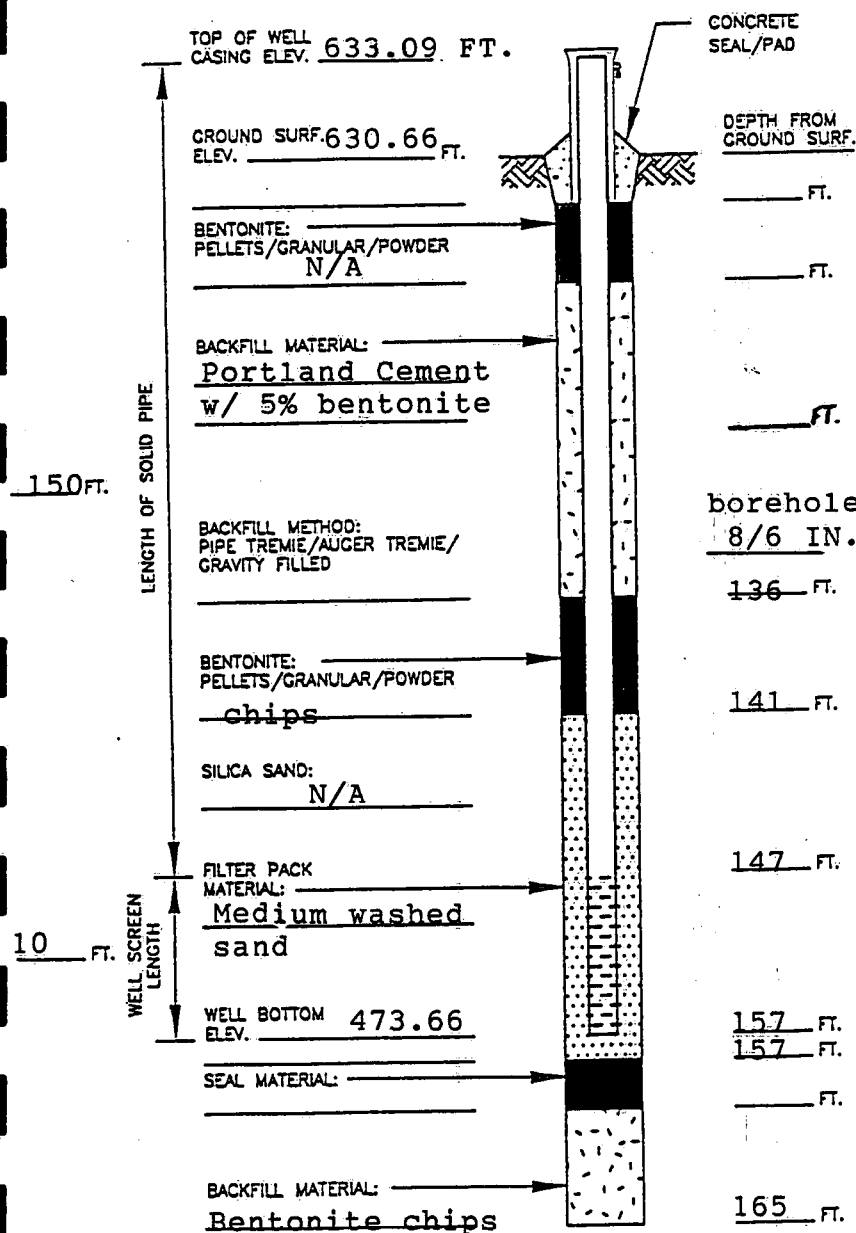
Well was developed again by RMT on February 26, 1998. Time spent developing
10 min.; approx. water volume removed: 72 gal.



Well Diagram
F-17 (9-94)

PROJECT NAME : L. E. Carpenter
PROJECT NO. : 3868.03
LOCATION: Wharton, New Jersey
DATE INSTALLED : 2/20/98
WELL NO. MW-11DR
PREPARED BY: _____

MONITORING WELL CONSTRUCTION



1) CASING DETAILS

A) TYPE OF PIPE:

PVC / STAINLESS / TEFLON / OTHER _____

PIPE SCHEDULE #304

PIPE DIAMETER I.D. 2 IN., O.D. _____ IN.

B) TYPE OF PIPE JOINTS:

SLIP / THREADED (W/TAPE ?) / OTHER _____

SOLVENT CEMENT: YES OR NO _____

C) TYPE OF WELL SCREEN:

PVC / STAINLESS / TEFLON / OTHER _____

SLOT SIZE: 0.01 IN.

SCREEN DIA: I.D. IN. 2 O.D. IN. _____

D) INSTALLED PROTECTOR PIPE W/LOCK ? YES OR NO

PROTECTOR PIPE DIA. _____ IN. LOCK NO. _____

2) WELL DEVELOPMENT

A) METHOD

BAILING/PUMPING/SURGING/COMPRESSED AIR/OTHER _____

B) TIME SPENT FOR DEVELOPMENT 15 minutes

C) APPROXIMATE WATER VOLUME: REMOVED 180 gallo

ADDED _____

D) WATER CLARITY:

BEFORE DEVELOPMENT -

CLEAR / TURBID / OPAQUE _____

AFTER DEVELOPMENT -

CLEAR / SLIGHTLY TURBID / TURBID / OPAQUE _____

E) ODOR ? YES OR NO

3) WATER LEVEL SUMMARY

A) DEPTH FROM TOP OF CASING AFTER DEVELOPMENT ?

4.2 FT. OR DRY

B) OTHER MEASUREMENTS (T.O.C.):

DATE / TIME _____ DEPTH _____

DATE / TIME _____ DEPTH _____

DATE / TIME _____ DEPTH _____

ADDITIONAL COMMENTS: Surface casing set to 18.5 ft. BGL
(ID=6 5/8")

Well was developed again by RMT on February 26, 1998. Time spent
developing: 25 min. Approx. water volume removed: 250 gal.

Weather conditions	N/A
---------------------------	------------

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: pH - +0.1 pH; COND. - +5%, TEMP (CORRECTED); TEMP. - +0.5°C; TURBIDITY +10%

Date _____



WELL DEVELOPMENT RECORD

PROJECT NAME: L.E. CarpenterWELL NUMBER: MW-11DRPROJECT NUMBER: 3868.03WELL DIAMETER: 2"DATE: 2/26/98SAMPLER: ENVIROTECHType Of Pump Used: Grunfos PumpPumping Rate (gallon/minute): N/AWater level before purging (nearest 0.01 ft. below reference point) 3.56 feetDepth to bottom of well (obtained from well logs) 157 feetCalculated volume of water in casing 25 Gallons (1 Volume)Weather conditions N/A

Date	Well Volume (gal)	pH (Units)	Turbidity	Conductivity Units: <u>umhos/cm</u>		Temperature (°C)	Pump Depth (0.01 ft.)	Cumulative Purge Volume, (gal)
				Uncorrected	Corrected			
2/26/98	1	10.48	Light	440		62.2	20	25
2/26/98	3	10.08	Light	232		59.6	40	75
2/26/98	5	10.18	Light	140		59.2	50	125
2/26/98	7	10.06	Light	138		58.3	70	175
2/26/98	9	9.54	Light	138		58.3	90	225
2/26/98	10	9.53	Moderate	135		58.2	100	250

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: pH - ± 0.1 pH; COND. - $\pm 5\%$; TEMP (CORRECTED); TEMP. - $\pm 0.5^\circ\text{C}$; TURBIDITY $\pm 10\%$

Signed _____

Date _____

QC'd By _____

Date _____